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Monthly Report

October 1987 Number 230

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NUEXCO REPORT 230 FIGURES OF THE MONTH (September 30, 1987)	This Month (Report 230)	Last Month (Report 229)	12 Months Ago (Report 218)
Exchange Value ($US per pound U_3O_8 equivalent)	16.65	16.65	17.00
US Premium for the Exchange Value (US$ per pound U_3O_8)	2.10	2.35	—
UF_6 Value ($US per kilogram U as UF_6)	46.75	47.00	48.00
US Premium for the UF_6 Value ($US per kgU as UF_6)	4.25	6.00	—
Transaction Value ($US per pound U_3O_8 equivalent)	18.20	17.55	17.35
Loan Rate (Per Annum)	4%	4%	4%
Conversion Value ($US per pound U as UF_6)	1.90	1.90	1.90
Near-Term Uranium Supply[1] (millions of pounds U_3O_8)	6.4	3.7	4.1
Near-Term Uranium Demand[2] (millions of pounds U_3O_8)	1.7	2.0	1.4
Near-Term Supply-Demand Ratio	3.7	1.8	2.9
Recent Uranium Sales:[3]			
Number of Transactions	9	6	4
Quantity of Material (Millions of pounds U_3O_8 equivalent)	19.2	1.6	0.5
Nuexco SWU Value:			
at 0.3 tails assay and delivery within one year ($US per SWU)	73	75	78
US DOE SWU Prices:			
USEC	119.00[4]	119.00[4]	119.00[5]
AFC	153.00[6]	153.00[6]	153.00[6]
Requirements	157.00[6]	157.00[6]	157.00[6]
Incentive Price	90.00[7]	90.00[7]	—
Market Value of Enriched UF_6[8]: ($US per kgU as UF_6)			
2.5 w/o U_{235}	441	446	458
3.0 w/o U_{235}	563	570	586
3.5 w/o U_{235}	688	697	717
4.0 w/o U_{235}	814	825	849

[1]Active inquiries to sell, for delivery within 12 months after contract signing.
[2]Active inquiries to purchase, for delivery within 12 months after contract signing.
[3]Uranium sales only; does not include loans, conversion, or SWU transactions.
[4]Effective since 10/1/86; scheduled to drop to $117 on 10/1/87.
[5]Effective since 10/1/85.
[6]Effective since 10/1/84.
[7]Effective since 10/1/86, for up to 30% of annual requirements.
[8]Calculated using the Nuexco Exchange Value, Conversion Value, SWU Value and 0.30 percent tails assay.

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EXECUTIVE SUMMARY
REPORT 230
(All data as of September 30, 1987)

Exchange Value
$16.65, unchanged

The **Exchange Value** is **$16.65** per pound U_3O_8, unchanged since last month.The US Premium (relative to the Exchange Value) is $2.10, down $0.25 since last month.

UF_6 Value
$46.75, down $0.25

The **UF_6 Value** is **$46.75** per kilogram U as UF_6, down $0.25 since last month.The US Premium (relative to the UF_6 Value) is $4.25, down $1.75 since last month.

Transactions

Nine recent natural uranium sales are reported, involving **19 million** pounds equivalent U_3O_8. Five of the sales involved spot or near-term delivery, and three met the conditions for inclusion in the Transaction Value. Active spot and near-term **uranium supply** amounts to **6.4 million** pounds U_3O_8 equivalent, up 2.7 million pounds since last month. Active spot and near-term **uranium demand** totals **1.7 million** pounds, down 300 thousand pounds from last month. The spot and near-term **supply-demand ratio** increased to **3.7 to 1**.

Transaction Value
$18.20, up $0.65

The **Transaction Value** is $18.20 per pound U_3O_8, **up $0.65** since last month. The calculation includes transactions involving a total of 3.2 million pounds U_3O_8 and equivalent UF_6, of which 1.9 million pounds are US-origin, and covers a period of 3 months.

Loan Rate
4%, unchanged

The **Loan Rate** is **4 percent** per annum, unchanged.

Conversion Value
$1.90, unchanged

The **Conversion Value** is **$1.90** per pound U as UF_6, unchanged since last month. Active secondary market supply for conversion services for delivery within three years totals 770 thousand pounds U as UF_6. Active demand totals 440 thousand pounds U as UF_6. One secondary market conversion transaction is reported.

SWU Value for delivery within one year: $73, down $2.00

The **SWU Value** at .3% tails assay and for delivery within one year is **$73** per SWU, down $2.00 since last month. Two secondary market SWU transactions are reported.

* * *

Essay

In this edited version of the speech he gave at the US Council for Energy Awareness' Uranium Seminar at Keystone, Colorado, Mr. George White, Jr. discusses future trends in the uranium industry, stressing the changing nature of contracting practices.

Analysis and Commentary

The US government recently released some key 1986 statistics concerning the US uranium industry. The industry seems to have reached a "valley" of activity, a fact that has implications for the US Secretary of Energy's upcoming determination of the industry's "viability." Given the criteria used by DOE, and the reported data, it will be difficult to make a case for improvement over the uranium industry's 1985 viability level.

United States

Within the past year, several important nuclear-industry mergers or strategic affiliations have taken place. Kraftwerk Union AG bought Exxon Nuclear Inc. (renamed Advanced Nuclear Fuels) and has announced an alliance with Bechtel Group Inc. to provide nuclear services to the US market. A French consortium of Framatome, Cogema Inc. and Uranium Pechiney has announced a joint-venture agreement with Babcock & Wilcox for nuclear fuel marketing, and Sweden's ASEA and Brown Boveri BBI of Switzerland are preparing to merge the two companies' operations.

* * *

Despite the refusal of the State of Massachusetts to participate in emergency planning for New Hampshire's Seabrook nuclear plant, Seabrook continues to move toward NRC approval of its low-power license.

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MONTHLY REPORT ON THE NUCLEAR FUEL MARKET

October 1987 No. 230

R. GENE CLARK, *EDITOR* CHARLES B. LEWIS, *ASSISTANT EDITOR*

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To Our Readers

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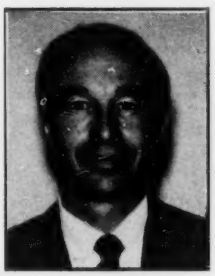

Nuexco Information Services is pleased to announce the addition of Thomas C. Pool to its staff. He will be responsible for the analysis of uranium production, including source, quantity, schedule and cost. Since graduating from Colorado School of Mines in 1968 in mining engineering, Tom has worked extensively in mining and construction, on a worldwide basis. He has wide experience in the uranium industry, focussing on mineral valuation, cost and feasibility studies. Tom comes to Nuexco from Douglas-Robertson, Consulting Engineers and Geologists, where he was a Vice-President and Director.

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September 30, 1987	Market Values	Active Supply[1] (thousands)	Active Demand[1] (thousands)
EXCHANGE VALUE	**$16.65**/lb. U_3O_8	6,435	1,725
US Premium	**$2.10**		
UF_6 VALUE	**$46.75**/kgU		
US Premium	**$4.25**		
CONVERSION VALUE	**$1.90**/lb. U as UF_6	770	440
SWU VALUE			
0.3 tails assay:			
delivery within one year	**$73**/SWU	200	70
LOAN RATE	**4%**/annum	1,100	250

	$/lb. U_3O_8	Millions of Pounds	Number of Transactions	Number of Months
TRANSACTION VALUE	**18.20**	**3.2**	**14**	**3**

[1]Supply and demand tables in the *Current Market Data* section of this Report detail the numbers for each category.

DEFINITIONS

1. The **Exchange Value** is Nuexco's judgment of the price at which transactions for significant quantities of natural uranium concentrates could be concluded as of the date indicated.
2. The **UF_6 Value** is Nuexco's judgment of the price at which spot and near-term transactions for significant quantities of natural uranium hexafluoride could be concluded as of the date indicated.
3. The **Conversion Value** is Nuexco's judgment of the price at which spot and near-term transactions for significant quantities of conversion services could be concluded in the secondary market as of the date indicated.
4. The **SWU Values** represent Nuexco's judgment of the price at which transactions for the sale of significant quantities of SWUs of stated origin for delivery in the specified time period could be concluded as of the date indicated.
5. The **Loan Rate** is Nuexco's judgment of the annual interest rate at which uranium loans could be concluded as of the date indicated.
6. The **Transaction Value** is a weighted average price of recent natural uranium sales transactions. The calculation is based on prices paid in:
   a. Transactions closed within the previous three month period for which delivery is scheduled within one year of the transaction date;
   b. At least ten transactions;
   c. Transactions involving a sum total of at least 2 million pounds U_3O_8 equivalent.

The sample time is extended as necessary to include these minima. Other currencies are converted to US dollars using conversion rates in effect on or near the transaction date.

7. **The US Premium** is Nuexco's judgment of the incremental price (relative to the Exchange Value or UF_6 Value, as applicable) at which transactions for significant quantities of natural uranium could be concluded as of the date indicated, if the buyer will accept only US-origin.

DERIVATIONS AND COMMENTS

1. All Market Values are based on:
   a. Data from recently completed transactions.
   b. Data from pending transactions.
   c. Firm bids to buy or borrow, and firm offers to sell or lend.
   d. Prices purchasers or rates borrowers have expressed a willingness to pay, but for which Nuexco is not aware of firm bids to buy or borrow, and prices sellers or rates lenders have expressed awillingness to accept, but for which Nuexco is not aware of firm offers to sell or lend.
2. Prices associated with deliveries under old or renegotiated contracts or other than arm's-length transactions are not included in the determination of these Market Values.
3. In the determination of the Conversion Value, Nuexco does not consider transportation charges other than those customarily provided by primary suppliers of conversion services.
4. The prices of conversion services or SWUs delivered under long-term contracts with primary suppliers are not considered in the determination of either the Conversion Value or SWU Value.
5. For the SWU Value, Nuexco converts SWU prices at varying tails and product assays to equivalent SWU prices at a tails assay of 0.30 weight percent U_{235} and a product assay of 3.0 weight-percent U_{235}, assuming feed costs corresponding to the Nuexco Exchange and Conversion Values determined as of the same date.
6. In calculating the Transaction Value, Nuexco does not account for the price of uranium delivered in connection with contracts which call for "market price" mechanisms. This exclusion applies particularly to contracts in which delivery prices are expressed as a function of future Exchange Values or any other indeterminate variable. Also excluded from the calculation are any other transactions in which the delivery price is defined in such a way that it cannot currently be determined.

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NATURAL URANIUM AND SECONDARY MARKET CONVERSION

(All data as of September 30, 1987)

The **Exchange Value** is **$16.65** per pound U_3O_8, unchanged since last month. US-origin uranium is commanding a **premium** (relative to the Exchange Value) of **$2.10** per pound U_3O_8 (down $0.25) in the form of concentrates, and $4.25 per kilogram U (down $1.75) in the form of UF_6. **Active supply** of natural uranium (concentrates and UF_6) for spot or near-term delivery totals **6,435,000** pounds U_3O_8 equivalent, up 2.7 million pounds since last month. The corresponding figure for **active demand** is **1,725,000** pounds, down 300 thousand pounds. The spot and near-term supply-demand ratio increased to 3.7 to 1.

The Current Market Data section of this Report lists nine natural uranium sales, totaling 19.1 million pounds U_3O_8 equivalent.

The **Transaction Value** is $18.20 per pound U_3O_8, up $0.65 since last month. The calculation extends over a 3-month period and includes 14 transactions involving 3.2 million pounds equivalent U_3O_8.

The **UF_6 Value** is $46.75 per kilogram U in UF_6, down $0.25 since last month. Three transactions involving UF_6 are reported, totaling approximately 550 thousand pounds equivalent U_3O_8. Demand for UF_6 remains weak.

The **Conversion Value** is $1.90 per pound U as UF_6, unchanged since last month. Active supply of secondary market conversion services totals 770 thousand pounds U as UF_6. Active demand totals 440 thousand pounds U as UF_6. One secondary market conversion transaction is reported.

The **Loan Rate** is 4 percent per annum, unchanged since last month.

* * *

The Exchange Value remained at $16.65 per pound U_3O_8 as of the end of September, and the Premium (relative to the Exchange Value) for US-origin declined to $2.10 per pound U_3O_8 (down $0.25), reflecting a slight weakening of prices in the near-term market for US-origin concentrates. Despite a moderate degree of activity in the USA in September, the lack of significant firm near-term demand in the USA and Europe is preventing any rise in prices.

Two spot U_3O_8 transactions are reported this month, involving US utilities buying approximately 500 thousand pounds of US-origin material. Three UF_6 transactions, involving approximately 550 thousand pounds U_3O_8 equivalent, also are reported. In addition, four longer-term U_3O_8 sales are reported, totaling approximately 18 million pounds. Two of these longer-term transactions involved US utilities' purchases of non-US-origin material, while the remaining two involved a single non-US utility buying from both Canadian and Australian suppliers.

Active supply of natural uranium has increased since last month, as several sellers have either increased their presence in the market, or have reentered it. US producers generally have maintained their asking prices at or above the $20 level for significant quantities of material since the Appeals Court ruling of July 20, 1987. However, a limited amount of US-origin U_3O_8 from the inventories of non-US utilities may be available at lower prices. Canadian sellers are becoming more aggressive, especially where they are able to compete for business without being hindered by the federal government upgrading policy, although there was little evidence of price cutting in September. While some observers believe that little uncommitted Canadian supply is available for the remaining months of 1987, it is likely that additional quantities could be made available on fairly short notice. However, spot demand is largely concentrated in the 1988 delivery period.

Several US utilities are in the market for spot or near-term supplies, totaling about 1.5 million pounds U_3O_8 equivalent. Near the end of the month, two US buyers entered the market seeking a substantial quantity of material both for 1988 and longer-term delivery. While firm demand is likely to materialize in 1988, current active spot market demand remains weak.

The UF_6 Value declined $0.25 this month, to $46.75, reflecting a somewhat greater abundance of UF_6 in the market. The Premium (relative to the UF_6 Value) for US-origin UF_6 is $4.25, a sharp drop from the $6.00 of last month. Much of the US-origin material currently moving through the market is UF_6 which had been held by non-US utilities, many of which are willing to swap their unneeded US-origin uranium, releasing additional US-origin UF_6 on the market. Conversely, US producers continue to hold on to their stocks of US-origin U_3O_8. As a consequence, the premium for US-origin UF_6 has weakened more than the premium for US-origin U_3O_8.

In Europe, most existing demand is for UF_6, especially for origins not covered by end-use restrictions, which may

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carry slightly higher prices. Adequate supply of UF_6 exists in Europe and as of the end of September, one utility was reported to be near concluding a transaction for a significant quantity of UF_6. In addition, at least two European utilities have expressed an interest in purchasing on the spot market, while several others may be poised to enter the market in the near future.

Since there is no certainty of immediate restrictions on DOE enrichment of non-US-origin feed, US utilities holding excess US-origin material may even be considering swapping or selling that material. There are several factors that can be expected to have a major impact on buying and selling decisions, including:

1. The probability of a court-ordered import restriction, as ordered by the Federal District Court in Denver and upheld by the Tenth Circuit Court of Appeals in the US Producers vs. DOE lawsuit. Such a scenario makes US-origin natural uranium more valuable for DOE enrichment contract holders, but there would be no premium on enriched product. In the absence of usage restrictions, US-origin material ceases to carry a premium once it is enriched. Until legal or legislative actions make enriching US-origin uranium more or less compulsory, there are strong reasons for withholding enrichment of US-origin, possibly substituting non-US-origin as long as possible.

2. The possibility of passage of Senator Domenici's draft legislation, which might require US utilities to limit their actual use of non-US-origin uranium, with scaled penalties for use of non-US-origin beyond a specified percentage. Such a restriction could lead to a premium on both natural and enriched US-origin uranium.

3. The possibility of a US-Canada free-trade agreement, which could make Canadian and US-origins of essentially equal value in the USA.

In the USA, several potential buyers remain cautious, waiting for the uncertainty surrounding the status of the US Producers vs. DOE lawsuit to diminish before making firm procurement plans. As of the end of September, DOE was continuing to accept non-US-origin feed for enrichment for US reactors. October 18, however, marks the date (unless extended) by which DOE must formally file its petition for *writ of certiorari* to the Supreme Court for review of the case, if it chooses to follow that legal avenue. Many observers speculate that DOE will take its case to the Supreme Court, although some doubt that the Supreme Court will be willing to consider the case, since it has no real constitutional or social ramifications. After its July 20, 1987 ruling upholding Judge Carrigan's June 1986 decision in favor of the producers, the US Tenth Circuit Court of Appeals had not, until early October, responded to DOE's emergency motion for stay of the ruling and to the various briefs filed by, or in support of, both sides in the case. The Appeals Court now has granted DOE a stay until November 7, 1987.

In addition to concern over the outcome of the US producers' lawsuit against DOE, uranium market participants worldwide have been closely watching the trade discussions taking place between representatives of the USA and Canada. The government of Canada (as well as Australia) has issued several strong statements of concern over the possible outcome of a DOE restriction on enrichment of its uranium destined for US reactors. The possibility of a restriction added to the difficulties of negotiating a comprehensive trade agreement with Canada, which many other nations see as a prototype for US trade agreements in the future, since Canada is the USA's largest trading partner.

On October 5, President Reagan notified the US Congress that he intends to enter into a Free Trade Agreement (FTA) with Canada on January 3, 1988. This was the last date that such notification could be given under the Trade Act of 1974, as extended by the Trade Agreement Act of 1979, which has special provisions for "fast-track" ratification by Congress of such agreements. As initialed by the US and Canadian negotiators, Canada will eliminate its current requirement of exporting uranium to the USA only in the most upgraded form possible and the USA will exempt Canadian uranium from possible enrichment restrictions under Section 161(v) of the US Atomic Energy Act. Section 161(v) states that the US DOE shall not enrich non-US-origin uranium for US end use to the extent necessary to maintain a viable US uranium industry.

Although no formal procedures are proscribed for Congressional action between October 5 and January 3, the US Trade Representative probably will initiate an informal consultation process with Congress. During this period the concerns and wishes of both houses of Congress, through Committees (primarily the Senate Finance Committee and the House Ways and Means Committee), and of individual Congressmen and Senators will be made known to the US trade negotiators and the White House. If the Reagan administration wants ultimate ratification of the FTA by Congress, it may have to try to accomodate some of the expressed Congressional concerns and then attempt to obtain Canada's concurrence of modifications of the FTA

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prior to January 3. At this writing, Congress has refused to provide the President with comments on the summary draft submitted to them and will not do so until the text of the full FTA is provided. The Reagan Administration expects to provide the full text by the end of October. A similar process is ensuing between Prime Minister Mulroney and the Canadian Parliament. Thus, the governments of Canada and the USA have until January 3, 1988, to accomodate the views of their respective legislative branches and agree on the final text of the FTA.

On January 3, Prime Minister Mulroney and President Reagan plan to sign the FTA, which can thereafter become effective only after ratification by the Canadian Parliament and the US Congress. After the President signs the FTA, he must submit to the Senate and House the final full text of the FTA, a draft of an implementing bill, a statement of any proposed administrative action to implement the FTA, and an explanation of how the implementing bill and proposed administrative action affect existing laws. Further, he must submit a statement explaining how the FTA benefits the USA and why the implementing bill and proposed administrative action is required or appropriate.

This package will likely be submitted to both houses of Congress shortly after Congress is back in session in January 1988. The implementing bill will be referred primarily to the Senate Finance Committee and to the House Ways and Means Committee. The Committees may not amend the bill but may only debate it and report it out to the full Senate and House of Representatives within 45 legislative days following submission. Thereafter each house of Congress has 15 legislative days in which to take a final vote on the implementing bill. If and when the implementing bill is enacted into law, the FTA comes into force with respect to the USA.

Given the nature of this rather complex procedure, final Congressional approval of the FTA may not take place until late Spring 1988. Further, the so called "fast-track" procedures that are involved in the enactment of the FTA are pursuant to rules of each house of Congress and accordingly may be modified relatively easily as with any of their other rules. The success or failure of the ultimate establishment of the FTA will undoubtedly depend largely on the ability of the US Trade Representative and the White House to work with Congress

If the treaty is ratified and Canadian uranium producers gain unrestricted access to the US market, regardless of restrictions applied to uranium of other origins, demand for US-origin material could be expected to decline dramatically.

* * *

Beginning in February 1987, the Transaction Value has risen at a steady rate, and now is substantially higher than the Exchange Value. Since the Transaction Value is a weighted average of price and quantity, and is based on all origins of uranium, the recent increase in percentage of transaction volume involving generally higher-priced US-origin has caused the Transaction Value and the Exchange Value to diverge. The Transaction Value also is calculated according to contract price, and is not adjusted to reflect extended payment terms or other conditions that have become increasingly more common. As long as the Transaction Value calculation includes a substantial percentage of US-origin deals, with uranium bought at prices approximating the Exchange Value plus the US Premium, the Transaction Value is likely to remain above the Exchange Value level.

* * *

The Loan Rate remained unchanged this month, at 4 percent per annum. The market for loans has been relatively inactive this month, and no loan transactions are reported, although two parties are reported to be close to concluding a transaction for US-origin U_3O_8.

* * *

The Conversion Value is unchanged this month. Overall, the secondary market for conversion services remains thin. In Europe, the relatively smaller supply of UF_6 has led to a proportionately smaller supply of secondary market conversion, since secondary market conversion is most often obtained through exchanges of U_3O_8 and UF_6. In addition, high primary conversion prices and the relative weakness of the US dollar versus various European currencies are factors acting to keep secondary market prices higher than those in North America. In the USA, a relative surplus of US-origin UF_6 has created the possibility of bargain-priced conversion for holders of US-origin U_3O_8 through deconversion swaps, but only in cases where all necessary conditions, such as origin of material, match closely.

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ENRICHED URANIUM AND SWU

The SWU Value declined slightly this month, to $73 per SWU. Demand for large quantities of secondary market SWU continues to be weak, although two buyers have shown interest in making small purchases. Two SWU transactions are reported this month, involving US and non-US utilities, both for small quantities. Another US utility currently is evaluating offers. Although some US utilities continue to evaluate the market for short-term delivery, much of the interest appears to come from a need to ascertain their options should DOE be unable to enrich their non-US-origin feed.

The SWU market continues to exhibit a wide range of prices depending on origin, location and various risk factors. The drop in SWU Value to $73 reflects the downward price pressure exerted by the presence and activity of the lower-priced SWU sellers, including the presence of Techsnabexport (USSR) SWU. SWU selling at the lower end to the middle of the market may, however, be considered relatively high-risk for US utilities' use, and is often found contained in enriched uranium product that may not match the buyers' product assay requirements.

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CURRENT MARKET DATA

EXCHANGE VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

Country (currency)	per lb. U_3O_8 in Concentrates			per kg. U in Concentrates		
	This Month (Sep 30, 1987)	Last Month (Aug 31, 1987)	12 Months Ago (Sep 30, 1986)	This Month (Sep 30, 1987)	Last Month (Aug 31, 1987)	12 Months Ago (Sep 30, 1986)
Australia (dollar)	23.16	23.41	27.06	60.20	60.86	70.34
Belgium (comm. franc)	635.74	627.59	714.29	1,652	1,632	1,857
Canada (dollar)	21.83	21.94	23.58	56.75	57.05	61.32
EEC (ecu)	14.75	14.61	—	38.34	37.99	—
Finland (markka)	73.48	73.25	83.37	191.02	190.44	216.75
France (franc)	101.96	100.73	112.29	265.07	261.86	291.92
FRG (mark)	30.63	30.16	34.32	79.64	78.42	89.21
Italy (lira)	22,112	21,845	23,800	57,485	56,791	61,873
Japan (yen)	2,437	2,363	2,608	6,335	6,144	6,780
Netherlands (guilder)	34.48	33.99	38.90	89.64	88.38	101.14
South Africa (rand)	34.51	33.91	37.53	89.71	88.16	97.56
Spain (peseta)	2,026	2,031	2,269	5,268	5,281	5,900
Sweden (krona)	107.07	106.19	117.48	278.37	276.06	305.43
Switzerland (franc)	25.46	24.85	27.81	66.19	64.61	72.31
UK (pound)	10.22	10.19	11.85	26.58	26.50	30.80
US (dollar)	16.65	16.65	17.00	43.29	43.29	44.20

TRANSACTION VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

Country (currency)	per lb. U_3O_8 in Concentrates			per kg. U in Concentrates		
	This Month (Sep 30, 1987)	Last Month (Aug 31, 1987)	12 Months Ago (Sep 30, 1986)	This Month (Sep 30, 1987)	Last Month (Aug 31, 1987)	12 Months Ago (Sep 30, 1986)
Australia (dollar)	25.31	24.68	27.61	65.81	64.15	71.79
Belgium (comm. franc)	694.92	661.52	728.99	1,807	1,720	1,895
Canada (dollar)	23.86	23.13	24.07	62.03	60.13	62.58
EEC (ecu)	16.12	15.40	—	41.91	40.04	—
Finland (markka)	80.32	77.21	85.09	208.81	200.73	221.22
France (franc)	111.45	106.17	114.60	289.75	276.02	297.93
FRG (mark)	33.49	31.79	35.02	87.06	82.66	91.05
Italy (lira)	24,170	23,025	24,290	62,837	59,861	63,147
Japan (yen)	2,664	2,491	2,661	6,925	6,476	6,919
Netherlands (guilder)	37.69	35.83	39.70	97.98	93.15	103.22
South Africa (rand)	37.72	35.74	38.30	98.06	92.92	99.57
Spain (peseta)	2,215	2,141	2,316	5,758	5,566	6,021
Sweden (krona)	117.04	111.93	119.90	304.28	290.98	311.72
Switzerland (franc)	27.83	26.19	28.39	72.35	68.10	73.80
UK (pound)	11.18	10.74	12.09	29.05	27.93	31.43
US (dollar)	18.20	17.55	17.35	47.32	45.63	45.11

[1]Calculated using currency exchange rates published in the *Wall Street Journal* on the last working day of the month.

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CURRENT MARKET DATA

CONVERSION VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

Country (currency)	per lb. U as UF_6			per kg. U as UF_6		
	This Month (Sep 30, 1987)	Last Month (Aug 31, 1987)	12 Months Ago (Sep 30, 1986)	This Month (Sep 30, 1987)	Last Month (Aug 31, 1987)	12 Months Ago (Sep 30, 1986)
Australia (dollar)	2.64	2.67	3.02	5.83	5.89	6.67
Belgium (comm. franc)	72.55	71.62	79.83	159.94	157.89	176.00
Canada (dollar)	2.49	2.50	2.64	5.49	5.52	5.81
EEC (ecu)	1.68	1.67	—	3.71	3.68	—
Finland (markka)	8.38	8.36	9.32	18.49	18.43	20.54
France (franc)	11.64	11.49	12.55	25.65	25.34	27.67
FRG (mark)	3.50	3.44	3.84	7.71	3.52	8.46
Italy (lira)	2,523	2,493	2,660	5,563	5,496	5,864
Japan (yen)	278.06	269.69	291.46	613.02	594.57	642.55
Netherlands (guilder)	3.93	3.88	4.35	8.67	8.55	9.59
South Africa (rand)	3.94	3.87	4.19	8.68	8.53	9.25
Spain (peseta)	231.23	231.79	253.64	509.77	511.01	559.17
Sweden (krona)	12.22	12.12	13.13	26.94	26.71	28.95
Switzerland (franc)	2.91	2.84	3.11	6.40	6.25	6.85
UK (pound)	1.17	1.16	1.32	2.57	2.56	2.92
US (dollar)	1.90	1.90	1.90	4.19	4.19	4.19

SWU VALUE AND UF_6 VALUE EXPRESSED IN SELECTED PRODUCER & CONSUMER CURRENCIES[1]

Country (currency)	SWU Value delivery within one year (Sep 30, 1987)	UF_6 Value per kg.U in UF_6 This Month (Sep 30, 1987)	UF_6 Value per kg.U in UF_6 Last Month (Aug 31, 1987)
Australia (dollar)	101.53	65.02	66.08
Belgium (comm. franc)	2,787	1,785	1,772
Canada (dollar)	95.70	61.28	61.93
EEC (ecu)	64.66	41.41	41.25
Finland (markka)	322.15	206.31	206.77
France (franc)	447.03	286.28	284.33
FRG (mark)	134.31	86.01	85.14
Italy (lira)	96,946	62,085	61,664
Japan (yen)	10,683	6,842	6,671
Netherlands (guilder)	151.17	96.81	95.95
South Africa (rand)	151.30	96.89	95.72
Spain (peseta)	8,884	5,689	5,734
Sweden (krona)	469.45	300.64	299.74
Switzerland (franc)	111.62	71.48	70.14
UK (pound)	44.83	28.70	28.77
US (dollar)	73.00	46.75	47.00

[1]Calculated using currency exchange rates published in the *Wall Street Journal* on the last working day of the month.

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CURRENT MARKET DATA

RECENT TRANSACTIONS[1]

Uranium Sales

Nuexco Transaction Number	Delivery Period	Approximate Quantity (thousands of pounds, U_3O_8 equivalent)	Approximate Price Range as Percent of Current Exchange or UF_6 Value[2]	Seller	Buyer	Remarks
4151	1990 on	5,001-10,000	R[3]	Producer	Utility	
4153	1992-99	1,501-3,000	R[3]	Producer	Utility	
4154	1992-99	1,501-3,000	R[3]	Producer	Utility	
4161	1988	101-300	108-112	Producer	Utility	US-Origin
4162	1988	101-300	R[3]	R[3]	Utility	US-Origin
4163	1993 on	5,001-10,000	R[3]	Producer	Utility	
4166	1989	101-300	103-107	Intermediary	Utility	UF_6
4167	1987	301-600	93-97	Intermediary	Utility	US-Origin UF_6
4168	1987	50-100	93-97	R[3]	Utility	UF_6

[1] Transactions listed are not limited to those in which Nuexco was involved, but also include others of which Nuexco is aware.
[2] Where US-origin material is involved, the range is based on the Exchange Value (or UF_6 Value) *plus* the premium (relative to the Exchange Value or UF_6 Value). The range reflects five percentage points (inclusive) per grouping, centered about the middle of the range.
[3] The notation R means that Nuexco either does not know, or that Nuexco has restricted that information to protect client or source confidentiality.

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Conversion Services
Secondary Market Sales

Nuexco Transaction Number	Delivery Period	Approximate Quantity (thousands of pounds, U equivalent)	Approximate Price Range as Percent of Current C.V.	Seller	Buyer	Remarks
4164	1988	101-300	113-117	Intermediary	Utility	

Nuexco Transaction Number	Delivery Period	Approximate Quantity[3] (thousands of SWU)	Approximate Price Range as Percent of Current SWU Value[4]	Seller	Buyer	SWU Origin	Remarks
4152	1988	less than 50	93-97	Intermediary	Utility		
4169	1988	less than 50	98-103	Intermediary	Utility		

[1]Transactions listed are not limited to those in which Nuexco was involved, but also include others of which Nuexco is aware.
[2]If tails assay is unknown or unspecified, Nuexco's calculation of SWU quantity assumes 0.30 w/o tails assay.
[3]Prices are usually normalized to 0.30% tails assay. Refers to SWU Value that corresponds to SWUs included in transaction. When prices and SWU values are expressed as discounts from a reference price (e.g., X dollars less than DOE's USEC base price at time of delivery), the percentage price range is based on the discounted prices, not on the reference price.

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CURRENT MARKET DATA

URANIUM SUPPLY
(September 30, 1987)

Nuexco Project Number	Delivery Period[1] (Thousands of Pounds U_3O_8) Spot or Near-term[2]	Intermediate or Long-term	Remarks
Available for Sale:			
ACTIVE			
87-1002	[illegible]0	—	
87-1014A*	[illegible]0	—	UF_6
87-1022	40	—	
87-1023	500	500 per year	1987-90
87-1053*	100	400 per year	1989 on
87-1084C*	125	—	UF_6
87-1091	1,000	1,000 per year	UF_6
87-1097	500	—	
87-1109*	50	250 per year	1990 on
87-1120*	1,000	—	
87-1123*	1,000	—	
87-1124*	500	500 per year	1988 on
87-1130*	750	—	
87-1001	—	400 per year	1989 on
87-1005	—	400 per year	1988-95
TOTAL:	6,435		
INACTIVE			
87-1017	1,000	—	
87-1055	250	300 per year	1988-93
87-1059	120	—	UF_6
87-1061*	780	800 per year	UF_6, 1988 on
87-1019	—	600 per year	1988-91
87-1025	—	250 per year	1988 on
TOTAL:	2,150		

*New or revised since last month.
[1]Measured from the date of this Report.
[2]For delivery within one year. This category excludes material deliverable within one year under other than spot or near-term contracts.
Projects removed since last month: 1047, 1062, 1068, 1079.

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URANIUM DEMAND
(September 30, 1987)

Nuexco Project Number	Delivery Period[1] (Thousands of Pounds U_3O_8) Spot or Near-term[2]	Intermediate or Long-term	Remarks
Inquiries to Purchase:			
ACTIVE			
87-1057*	175	—	
87-1107*	450	1,225	1990-92
87-1113*	390	—	UF_6
87-1116A*	60	—	UF_6
87-1121*	650	650 per year	1988-96
87-1013	—	1,200 per year	1990-95
87-1021*	—	200 per year	1992 on
87-1049	—	700 per year	1989-96
87-1108*	—	200 per year	1991-2000
TOTAL:	1,725		
INACTIVE			
87-1007	150	—	
87-1030*	175	—	
87-1040	300	300	1989
87-1048	50	—	
87-1073	800	—	UF_6
87-1078*	200	—	
87-1114*	525	—	
87-1125*	100	—	
TOTAL:	2,300		

*New or revised since last month.
[1]Measured from the date of this Report.
[2]For delivery within one year. This category excludes material deliverable within one year under other than spot or near-term contracts.
Projects removed since last month: 1070, 1082, 1092, 1095.

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CURRENT MARKET DATA

LOAN SUPPLY AND DEMAND
(September 30, 1987)

Nuexco Project Number	Delivery Period[1] (Thousands of Pounds U_3O_8) Within 1 Year	Beyond 1 Year	Remarks
Available for Loan:			
ACTIVE			
87-1064	600	—	
87-1119*	500	—	
TOTAL:	1,100		
INACTIVE			
87-1012	2,000	—	
87-1031	1,000	—	
87-1033	1,000	—	
87-1071	1,000	—	UF_6
TOTAL:	5,000		
Inquiries to Borrow			
ACTIVE			
87-1098	250	—	UF_6
TOTAL:	250		

*New or revised since last month.
[1]Measured from the date of this Report.
Projects removed since last month: None.

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CONVERSION SUPPLY AND DEMAND
(September 30, 1987)

Nuexco Project Number	Delivery Period[1] (Thousands of Pounds U as UF_6) Within 3 Years	Beyond 3 Years	Remarks
Available for Sale:			
ACTIVE			
87-1122*	330	—	
87-1131*	440	—	
TOTAL:	770	750	
INACTIVE			
87-1008*	750	750	
87-1084C	120	—	
TOTAL:	870		
Inquiries to Purchase:			
ACTIVE			
87-1072	440	—	
TOTAL:	440		
INACTIVE			
87-1132*	220	—	
TOTAL:	220		

*New or revised since last month.
[1]Measured from the date of this Report.
Projects removed since last month: none.

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CURRENT MARKET DATA

SWU SUPPLY AND DEMAND
(September 30, 1987)

Nuexco Project Number	Delivery Period[1] (Thousands of SWU) Spot or Near-term[2]	Intermediate or Long-term	Remarks
Available for Sale:			
ACTIVE			
87-1068	100	—	1988
87-1096*	100	—	1988
TOTAL:	200		
INACTIVE			
87-1004	55	—	1987
87-1058*	150	—	1987
87-1059	25	—	1987
87-1128	300	—	1987
TOTAL:	530		
Inquiries to Purchase:			
ACTIVE			
87-1100*	55	—	1988
87-1116B*	15	—	1988
TOTAL:	70		
INACTIVE			
87-1065*	150	—	1988
TOTAL:	150		

*New or revised since last month.
[1]Measured from the date of this Report.
[2] For delivery within one year. This category excludes SWU deliverable within one year under other than spot or near-term contracts.
Projects removed since last month: 1024, 1042, 1087.

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ESSAY

OLD SHIBBOLETHS AND NEW VERITIES

This is an edited version of the speech given by Nuexco's George White, Jr. at the U.S. Council for Energy Awareness Uranium Seminar at Keystone, Colorado on September 16, 1987.

I last spoke to this group in 1984, right here in Keystone, Colorado. The thesis advanced then was that the uranium market had fundamentally changed as a consequence of certain events. These events were (a) the adoption by DOE of the US Enrichment Contract, (b) the discovery of new, very high grade uranium deposits, of which Cigar Lake was representative, and (c) the plethora of reactor cancellations. I concluded that it was difficult to make a case for higher uranium prices. This conclusion, while prophetic, was not uniformly popular with the 1984 audience. Today's message may prove equally troublesome to some.

Since late 1980, many industry observers have noted that a return to "normalcy" in the uranium business was dependent on the occurrence of one or more events, including:

— The liquidation of excess inventories;

— The work-down of inventories to levels where new demand would emerge;

— The recognition by buyers that available supplies were tightening as compared with unfilled future requirements.

The concept of "normalcy" is a difficult one. What is normal in the uranium business? I submit that the commercial history of uranium is too short to have established any baseline condition from which to measure. Indeed, if one looks at the uranium market over the past 19 years, it might be argued that the normal condition is one of rather dramatic price movement.

Figure 1 shows the Nuexco Exchange Value and indicates the most consistent thing as 4 years of prices in the range of $6.00 per pound U_3O_8. I don't think anyone would suggest that price level as the norm. Another approach is shown in Figure 2, where the Exchange Value is also shown in 1987 constant dollars. Suffice it to say that we, at least, have been unable to find anything that we feel comfortable defining as normal.

Actually, it seems that "normal" is, in reality, a euphemism for the word "desirable." And, since $100 per pound U_3O_8 prices are desirable for producers and $10 per pound U_3O_8 prices are desirable for utilities, there is little likelihood that buyers and sellers will ever agree on what is normal. If there is no such thing as normalcy, we cannot look forward to its return. What then is the shape of the future market? I believe the uranium market in the years ahead will be driven and characterized by the following:

1. Uranium contracts will be characterized by substantially greater quantity flexibility.
2. Increasing quantities of uranium will be purchased on the spot and near-term markets.
3. Increasing quantities of uranium deliveries will be spot market prices.
4. New commercial and financial tools and techniques will be developed as buyers, sellers and traders of uranium seek ways to shift the business and financial risks associated with the altered market environment.

The trend towards greater quantity flexibility is a natural outgrowth of the other developments in the nuclear fuel cycle. The US enrichment contract is a requirements contract. New conversion contracts are increasingly requirements-based as opposed to providing for fixed quantities. It is hardly surprising that buyers are insisting on equivalent flexibility in their uranium supply arrangements. We should remember that the amount of uranium required is a dependent variable, a function of capacity factors, fuel designs and enrichment considerations.

There are a number of routes available to obtain the desired degree of flexibility. An obvious approach is to build it into individual long-term supply contracts, with provisions that allow the buyer to increase or decrease nominal tonnage. It is not uncommon for buyers to have the right to increase or decrease quantity by 30 percent with 12 months' notice, or by 20 percent with six months' notice. Some contracts use a different approach, whereby the supplier agrees to provide a certain percentage of the buyer's needs, subject perhaps to certain minimum and/or maximum amounts, whatever those needs may be.

A second route involves contracting for firm quantities which are less than the anticipated total requirement, with the specific intention of purchasing the balance in the spot or near-term market when the total quantity needed is actually known. A third route involves relying on the spot and near-term markets for 100 percent of requirements. This approach minimizes the chances of having too much uranium on hand or having it too soon. While reliance on the spot market for 100 percent of requirements has, to date, generally been viewed as too risky and hence inappropriate for the largest nuclear utilities, such strategies have worked very well for other, smaller utilities. And, in an expanded spot market, the larger utilities could well increase their participation in the spot market, particularly if they mitigate the risk with some extra inventory.

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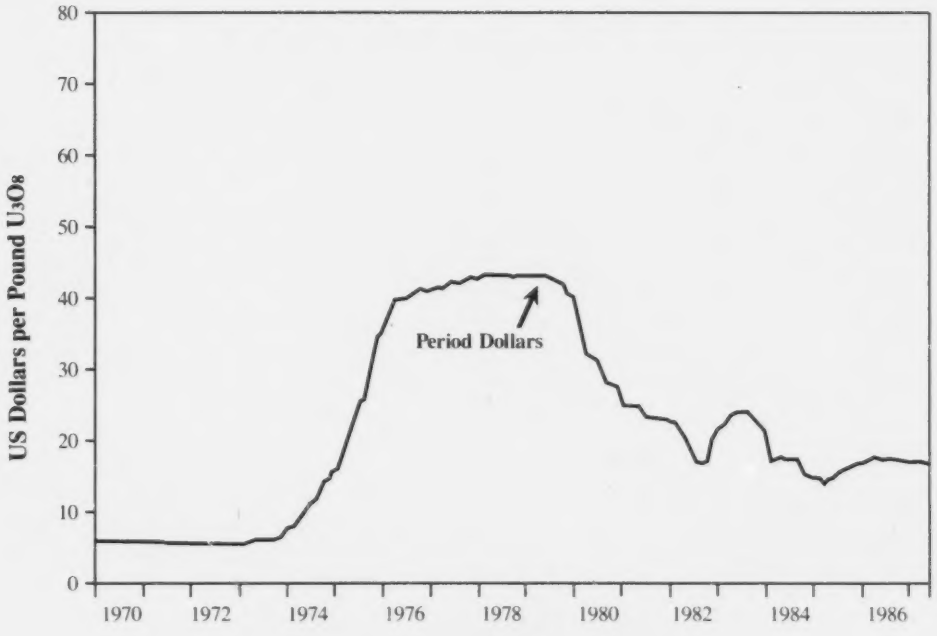

Figure 1
HISTORICAL NUEXCO EXCHANGE VALUE

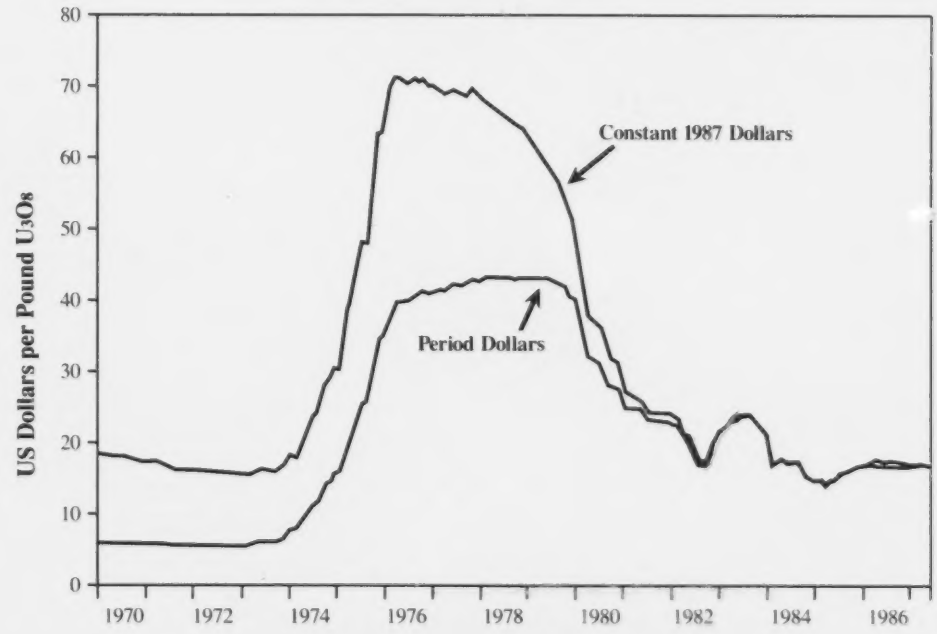

Figure 2
HISTORICAL NUEXCO EXCHANGE VALUE
(Period Dollars Versus Constant 1987 Dollars)

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The net result, regardless of which route or combination of routes is adopted, is that less tonnage will be under firm contract, not only in terms of absolute quantity but also as a percentage of total forward requirements. The operative word here is firm. Nominal tonnage is one thing; firm tonnage or bankable tonnage may be something quite different.

The previous discussion leads me to conclude that increasing quantities of uranium will be purchased in the spot and near-term markets. I must point out that this assertion is not supported by currently available historical data. That data suggests that the volume traded in the spot market is an inverse function of the trend of spot market prices. I am, however, making a leap of faith to propose that, while utility participation in the spot and near-term markets may fluctuate as a function of price or other temporary factors, participation will increase absolutely over time.

Despite the lack of current evidence, I believe that this argument has an almost irrefutable logic. I see two driving forces. First, spot market purchases are the ideal means for utilities to match uranium deliveries with actual needs. Second, pricing has increasingly become an issue with Public Utility Commissions in general and in prudency reviews in particular. Simply put, PUC's have but a limited capacity or willingness to learn the complexities and peculiarities of the uranium market. They can understand and have accepted published spot-market-price indicators, and have normally allowed such prices to be passed through to rate-payers. Paying the spot price will likely remain a defensible posture. On the other hand, prices above the spot level run the risk of closer scrutiny and possible disallowance.

My third point was that increased quantities of uranium would be delivered at spot market prices. If, in fact, more uranium is purchased in the spot market, such purchases will represent at least a portion of the increase in spot market-priced deliveries. In addition, however, I believe that spot market price indicators will increasingly be used as the primary price determinants in long-term contracts.

Figure 3 shows the amount of uranium delivered at spot market prices for the years 1983 through 1986. It also shows the amount of material that would have been delivered at such prices, but for the operation of floor price provisions. And it indicates that, in 1985 and 1986, about 40 percent of all uranium was delivered under contracts with spot market-related pricing provisions. While four years does not constitute a proof, the trend is evident and the absolute numbers are impressive. Further, we believe that the 1987 data will equal or exceed the 1986 figures.

While spot market pricing of long-term contracts has been primarily a US phenomenon, non-US buyers are showing increased interest in the approach, as a consequence both of the experience of US buyers and of dissatisfaction with the pricing arrangements of their own contracts. Neither a sudden nor a total change is anticipated, even in the USA, but as existing contracts expire and new long-term contracts or extensions are negotiated, we expect to see additional non-US buyers adopting spot market-related pricing provisions.

The development of these three trends will, in turn, lead to other commercial and financial changes. Consider the producers. Financing the development of uranium production operations has historically been a phased affair. Typically, equity capital is used to fund land acquisition, exploration and early development. Later, the larger costs of mine and mill construction are funded with debt which is secured by the facilities themselves and a portfolio of sales contracts that guarantee the purchase of the output at prices sufficient to service and repay the loans. The original financing of the Ranger project in Australia, which was well documented in its original prospectus, is a textbook example.

But if future long-term contracts are indeed characterized by extreme tonnage flexibility, and the pricing is market-based instead of firm, will similar financing be available for new projects? I doubt it. Furthermore, only the highest-grade producers have the operational capability to deal with a portfolio of contracts, all of which provide requirements-type flexibility, and even those high-grade producers could face difficult financing problems. Will utility buyers be sensitive to these producer predicaments and moderate their demands? I doubt it.

And consider the utility position. For utilities in general, and US utilities in particular, there is the public oversight issue, the need to deal with second-guessing and 20/20 hindsight, often with respect to actions taken years earlier in good faith and with the best information then available. The need to avoid being wrong often overrides the desirability of being smart.

In addition, nuclear fuel imposes an enormous financial burden on utilities. Where the nuclear fuel lease was once seen as the nirvana, we have seen that whatever the accountants give they can also take away. As you know, FASB statement No. 71 requires that off-the-balance-sheet financing be reflected on the balance sheet beginning in 1988. Increased utility debt, the downgrading of bond ratings, and the need to improve financial results generally suggest the need and opportunity for new initiatives.

And while buyers and sellers may develop close personal relationships, the realities of both the public utility and producer sectors, including recent efforts to enact protectionist

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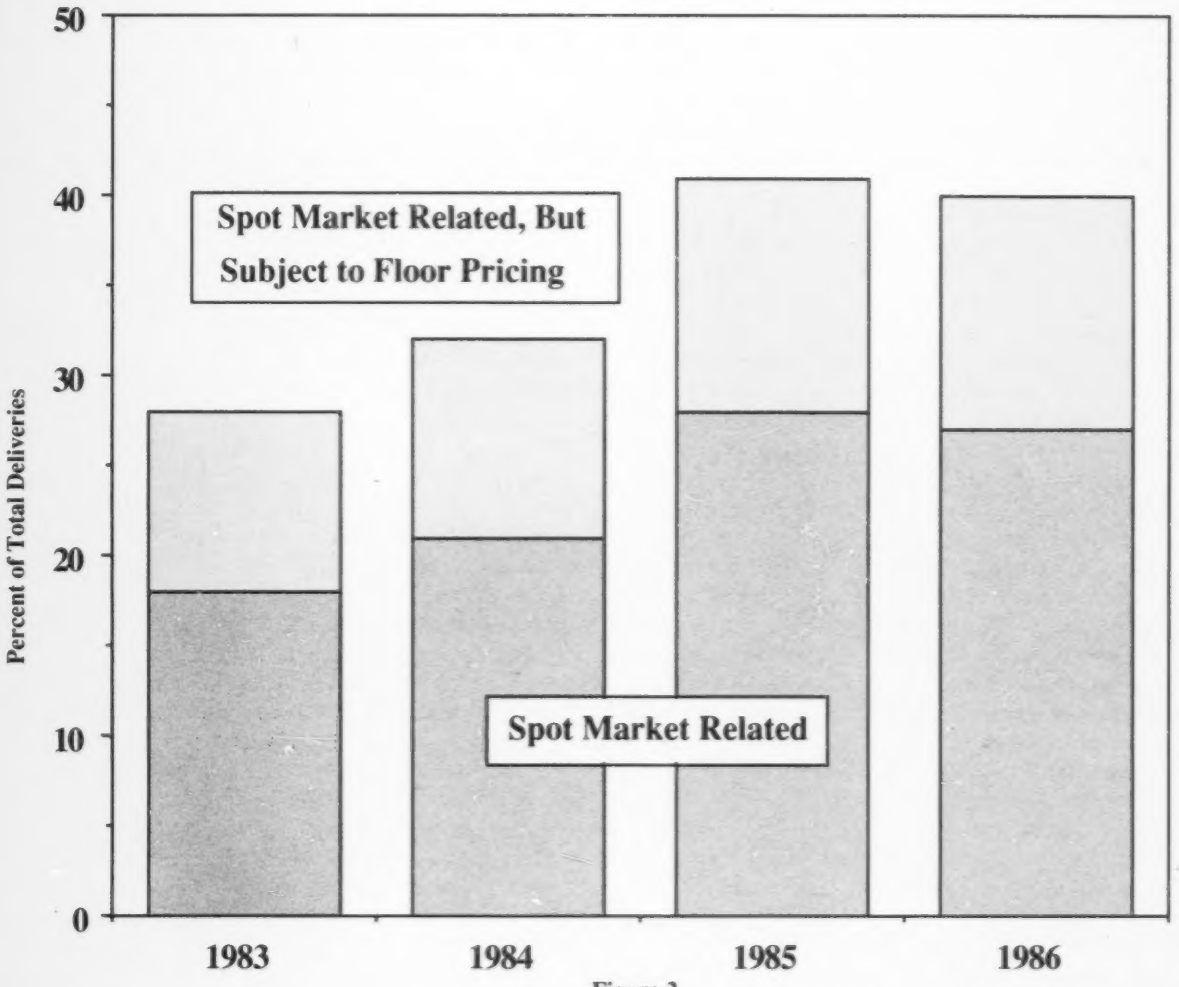

Figure 3

URANIUM DELIVERED UNDER SPOT MARKET-RELATED PRICING PROVISIONS

legislation, suggest the maintenance of, and possibly even an increase in, the traditional adversarial posture. Here, then, is the challenge for marketing and financial managers. But identifying problems and providing solutions are two entirely different matters.

The central issue is one of risk. Who is at risk? What sums are at risk? What is the duration of the risk? And the solutions to the problems identified above involve the shifting of risk from the existing players to new parties via new mechanisms. If sellers will not sell at market price, and buyers insist on market price, there is an opportunity for an intermediary to step in. That intermediary role could be assumed by existing uranium traders, or by equity investors.

Certainly, over the past several years the brokers and brokers/traders have increasingly involved themselves directly in transactions as principals. Such involvement often reflected relatively risk-free, so-called "back-to-back" deals, designed to mask identities and prices or to expedite complex or multi-party transactions. More recently, however, some of these organizations have become more aggressive, making commitments and accepting risk, sometimes considerable risk, with respect to mismatches in time, origin, delivery location, and form of uranium.

To my best knowledge, the uranium business does not yet boast big position leaders, such as are represented by Salomon Brothers and Goldman Sachs in the equity and debt markets. But that day could be coming. While most of

the present brokers and broker/traders appear to lack the requisite capital resources to engage in such trading for their own account and risk, one can easily imagine a joint venture where the small uranium broker provides expertise and a commercial bank, insurance company, investment bank, or other large entity provides capital. The financial resources of such organizations would also provide the instant credibility that the smaller players would lack.

In addition to new and larger players, we anticipate new commercial and financial tools and techniques. There is no reason to believe that interest rate swaps, currency swaps and forward hedges and even price swaps cannot be used in the nuclear fuel market just as they are in oil and other commodities. While the utilities and producers are not typically staffed or inclined to do this sort of thing themselves, it is precisely this kind of expertise that can be expected of those entities involving themselves as intermediaries. This development does not constitute wishful thing. Albeit a modest beginning, a few substantial and sophisticated transactions have already been completed. More will follow.

Summary and Conclusion

I suggest that market trends are creating new situations in which it is increasingly difficult for utilities and producers to accommodate each others' requirements. The needs of one tend to impose unacceptable risks on the other. An opportunity has developed for financially strong and sophisticated entities to become involved in ways that will reduce risk for the principal parties. As with other commodities, these new associations will tend to supplant the traditional linkages between producers and users.

One final matter may have occurred to many of you. The original outline and initial draft of this paper were completed prior to the July 20, 1987 ruling by the 10th Circuit Court of Appeals in the lawsuit involving the US producers and DOE. The obvious questions is: could the basic positions advanced here be altered by judicial or legislative events? My answer is no. While the timing of the forecast trends may be accelerated or slowed by court or congressional actions, I anticipate that, even in a distinct multi–market environment, each will develop along the suggested lines.

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RECENT DEVELOPMENTS

UNITED STATES

Recent Nuclear Industry Mergers

Within the last year, several major nuclear-industry companies have been involved in mergers or strategic affiliations that have the potential to substantially affect the US nuclear business. These alliances include Kraftwerk Union's (KWU) purchase of Exxon Nuclear Inc. in late 1986; a recent alliance between KWU and Bechtel Group Inc.; a joint venture agreement between a French consortium consisting of Framatome, Cogema Inc. and Uranium Pechiney with Babcock & Wilcox (B&W); and a proposed merger of Sweden's ASEA and BBC Brown Boveri of Switzerland.

With the possible exception of the ASEA-Brown Boveri merger, these alliances are aimed primarily at giving European firms a better entree into the US nuclear market, although improved presence in other markets could result as well.

During much of 1986, rumors persisted that KWU was interested in acquiring the nuclear fuel fabrication subsidiary of Exxon, Exxon Nuclear. A deal finally was approved by the Nuclear Regulatory Commission (NRC) in October 1986, in which KWU purchased a majority interest in Exxon Nuclear, which was renamed Advanced Nuclear Fuels (ANF) Corp. KWU's purchase arrangement included buying all of Exxon Nuclear's common stock, with Exxon Corp. keeping an option for some preferred stock for up to two years. In order to avoid any problems with access to classified US government information, Exxon Corp. has taken over Exxon Nuclear's former DOE contractor subsidiaries Exxon Nuclear Idaho Co. Inc. and Jersey Nuclear-Avco Isotopes Inc. ANF will continue to be headquartered in Bellevue, Washington and retains the former Exxon Nuclear subsidiaries in Brussels, Belgium and Lingen, FR Germany, the site of a manufacturing facility.

Exxon reportedly controlled approximately 15 percent of the US reload market, a figure that the new company is eager to expand. As ANF, the venture reportedly will share expertise with KWU, coordinating the companies' research and development activities and identifying areas for independent research work. Although KWU also manufactures nuclear fuels for BWRs and PWRs, US customs duties on import of fabricated fuel assemblies have inhibited KWU's efforts to penetrate the US reload market. ANF will also possibly manufacture and market KWU-based nuclear services technology in the USA, including fuel rod consolidation technology.

KWU also owns 60 percent of the KWU-Nukem joint venture fuel fabrication plant Reactor Brennelement Union (RBU), in Hanau. To complete the purchase of Exxon Nuclear, the venture had to gain the approval of German antitrust law authorities; by buying the Exxon plant in Lingen, KWU would be in a position to control over 80 percent of the German LWR fuel rod market. The approval reportedly was based on the strong competition from other European fuel fabricators, which would act to restrain prices.

In June 1986, Bechtel Group Inc. and KWU announced what they termed a "strategic alliance" to compete jointly in the US nuclear services market. The venture, which is expected to eventually form a new organization, reportedly will offer a broad range of services, including inspection and testing, supply, repair and replacement of equipment, outage planning, radioactive waste and processing management, decontamination and refueling. Bechtel currently has about 4,000 of its 9,000 nuclear division workers committed to service work on more than 40 operating plants.

The alliance gives KWU a much better position in the US services market, as well as possibly improving Bechtel's chances in the European market, where the US company has only a very small presence. Thus far, KWU has done a small amount of consulting and examination-testing work in the USA, but has not succeeded on a large scale in the US market. While KWU has considerable experience in nuclear steam supply systems (NSSS), having supplied 32 PWR and BWR plants on a turnkey basis, Bechtel has concentrated on architect/engineering and construction, and has been involved in building about 40 percent of the free world's reactors. KWU's affiliation with Advanced Nuclear Fuels and now Bechtel offers the possibility of integrated fuel supply and reactor service arrangements. This degree of integration potentially could compete head-on with Westinghouse in the USA.

Also looking to compete in the US nuclear fuel fabrication market, a consortium of three French companies — Framatome, Cogema Inc., and Uranium Pechiney — have signed a letter of intent with Babcock & Wilcox in which the French firms will buy a 49-percent share of B&W's

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commercial nuclear fuel services unit in the USA, including B&W's fuel manufacturing plant in Lynchburg, Virginia. Not included is B&W's separate fuel operation for the US Navy. The French firms intend to form a new US corporation for their part of the venture, in which Framatome and Cogema will each own 40-percent shares, and Uranium Pechiney will hold a 20-percent share.

The joint venture will be concerned primarily with marketing PWR nuclear fuel, and not with nuclear services, at least for the present. Under a 1981 agreement with Westinghouse, Framatome is excluded from marketing its standard PWR fuel in the US market; now, under the venture with B&W, it can participate in the US market, albeit indirectly. The French participation primarily is based on financial, rather than technological, involvement, although there is the potential for much increased access to several US nuclear market elements, such as reprocessing and nuclear waste management, where the French companies have considerable experience.

In August 1987, Sweden's ASEA and Switzerland's Brown Boveri BBC announced that, effective January 1, 1988, the two companies would merge their operations into one company, whose headquarters location has yet to be announced. Although the merger still must be approved by the Swedish and Swiss governments, company shareholders and labor unions, the new company, named ASEA Brown Boveri, will be the world's largest heavy electrical manufacturer, having annual sales of more than $15 billion. Although the merger is aimed mainly at increasing the companies' business in Western Europe, one of its objectives will be to increase its presence in the US market, where it currently is not well known.

Both ASEA and Brown Boveri have considerable involvement in the nuclear business. ASEA, through its subsidiary ASEA-Atom, is a turnkey supplier of nuclear plants, and also supplies fabricated nuclear fuel. In particular, ASEA-Atom has been increasing its share of the BWR control rod market, including contracts to supply hafnium-tipped control rods to several US plants. Brown Boveri's main nuclear-related business has been manufacture and repair services for turbine generators and related power equipment. Three BB turbine generators are to be installed at TVA's Bellefonte station. Brown Boveri also has been involved in rebuilding several Westinghouse turbines at Commonwealth Edison plants, and at Sacramento Municipal Utility District's Rancho Seco unit.

* * *

Seabrook Update

For the last two years, the Seabrook and Shoreham nuclear plants have been the center of a controversy involving the authority of the federal government to license plants for operation even where their operation and licensing is resisted by local communities or state governments. Seabrook Unit 1, whose largest ownership is held by New Hampshire Yankee, was built in New Hampshire but lies within two miles of the Massachusetts border. Its proximity to Massachusetts places several communities in that state within the 10 mile-radius emergency planning and evacuation zone. The Shoreham reactor, owned by Long Island Lighting Company (LILCO) of New York, was built on a part of Long Island whose roadways, say critics, do not provide sufficient capacity for an emergency evacuation of summertime crowds that use the area's popular beaches. In both cases, the plants are complete and ready to begin operation. At issue is whether state governments can block the licensing of a plant by the US Nuclear Regulatory Commission (NRC) by refusing to participate in the emergency evacuation exercises required for licensing.

Seabrook Unit 1, a 1,150-MWe Westinghouse PWR, is owned by 16 utility partners, with New Hampshire Yankee comprising 36.1 percent of the total ownership. The plant was scheduled to begin loading fuel in June 1986, with commercial operation on October 31, 1986. Although New Hampshire had approved the plant, three Massachusetts townships lie within the 10-mile radius emergency evacuation zone, and thus are affected by any emergency planning for the plant. Massachusetts Governor Michael Dukakis had early expressed his opposition to the plant's operation, but in the spring of 1986 he had offered a compromise that appeared to resolve the problem; if the plant would shut down during the peak summer months, he would not attempt to block its licensing.

Then, in April 1986, the accident at Chernobyl occurred. After that event, Dukakis withdrew his compromise offer and ordered a study of the plant's safety. At the time, Dukakis also was preparing for his November reelection bid for the governorship. Because the governor did not file the necessary emergency response plans with the Federal Emergency Management Agency (FEMA), and would not allow Massachusetts' participation in the emergency planning required for initial licensing of Seabrook, the NRC

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was forced to withhold the plant's license to load fuel, then scheduled for June 1986. (New Hampshire had already approved the evacuation plans.)

In August, Seabrook's owners requested that the NRC review a utility-sponsored study showing that the plant's technical features and especially strong containment structure allowed a reduction in the Emergency Planning Zone (EPZ) from a 10-mile radius to only one mile, with no greater danger to the public. If such a reduction could be approved, then Massachusetts would have no grounds for delaying operation of the plant. The owners estimated that the delay would cost approximately $50 million per month.

At the same time, Seabrook's owners also requested that the NRC grant the fuel-loading license, on the grounds that it would allow precriticality testing and evaluation, and since it did not provide for actual criticality, would not affect the emergency planning controversy in any way. In October 1986, the NRC approved the fuel-loading license for Seabrook.

In October and November 1986, Massachusetts challenged the fuel-loading license before the Atomic Safety and Licensing Appeal Board (ASLAB), on the grounds that all emergency planning matters must first be resolved before any licensing can proceed. In November, the ASLAB found that zero-power and low-power licenses did not require such a resolution.

In December, Seabrook's owners again asked the NRC to limit the required evacuation zone to a one-mile radius. Then, in January 1987, the NRC commissioners voted 4-1 to review the ASLAB decision, ordering the NRC staff not to issue a low-power license. By June 1987, FEMA had issued a report critical of the plant's evacuation plans, but stated that such a finding was not to be considered binding on the NRC in issuing operating licenses. Meanwhile, ASLAB had denied the Seabrook owners' request to have the EPZ reduced to a one-mile radius.

Also in June, Rep. Ed Markey (D-Massachusetts) sponsored an amendment in the House Energy and Commerce Committee that would prohibit the NRC from issuing full-power licenses to any plant not operating as of January 1, 1987, unless all states within a 10-mile radius of the plant, FEMA, and the NRC all agreed that the evacuation plans were adequate. Such a proposal would effectively have given the 10-mile radius the status of a law, which it does not now have. Markey's amendment was defeated in a tie vote.

In August, however, the bill was attached to a compromise bill (H.R. 3037) authorizing funding of the NRC for fiscal years 1988 and 1989. After debate on the House floor, Markey's amendment was again defeated, this time by 261-160. While Markey and his supporters portrayed the alleged dangers posed by the plants as a local issue, nuclear industry supporters and lobbyists effectively turned the debate into an issue with national consequences. For the present, Congress appears to have conclusively supported federal regulatory control of nuclear plants, denying states' veto power over licensing decisions.

Following the Congressional debate, Seabrook's owners asked the NRC to lift its January stay on issuing a low-power license, and filed with the NRC an emergency plan covering six affected Massachusetts towns. The utility makes clear that the emergency plan was prepared to include even a complete lack of cooperation on the part of the Massachusetts state government. If a low-power license is granted, testing at up to 5-percent power could commence before the end of the year, with the plant possibly entering commercial service in mid-1988.

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THE US URANIUM INDUSTRY IN 1986 — IMPLICATIONS FOR VIABILITY

Introduction

At the US Council on Energy Awareness' 1987 uranium seminar in Keystone in September 1987, representatives of the US Energy Information Administration (EIA) presented statistics on the US uranium industry's activities during 1986 and the first half of 1987. Howard Walton (recently appointed Director of EIA's Nuclear and Alternate Fuels Division) presented statistics on the industry's operations and financial performance, and William Liggett outlined US uranium marketing activities. This article summarizes these presentations, presents comparisons with previous years' activities, and gives Nuexco's interpretation of significant developments indicated by this information. The statistics and analyses derived from them will be the basis of EIA's annual report on the uranium industry's viability, prepared to assist the Secretary of Energy in his annual viability determination. In addition, an exhaustive statistical report on the 1986 US uranium industry and US uranium supply, demand, marketing, and price is scheduled for release on October 23.

Production

The US uranium industry produced 13.5 million pounds of U_3O_8 in 1986, a 2.2 million pound increase over that produced in 1985. It may not be evident from the aggregate EIA statistics that, without the increased production of one company (Energy Fuels Nuclear, Inc.), the industry's production would have declined to about 9 million pounds U_3O_8. Figure 4 shows US concentrate production by state from 1979 through 1986. This figure clearly shows the rapid decline of uranium production in the old-line uranium mining states of New Mexico and Wyoming. In 1980, the year of the US industry's peak production of 43.7 million pounds, these two states accounted for 35 percent and 28 percent of US production, respectively. In 1986, they jointly accounted for only 10 percent of total production. The "Other" category encompasses primarily Colorado, Florida, Louisiana, Utah and Washington. Utah was especially important in 1986, as the site of the mill used by Energy Fuels.

Production from unconventional sources (primarily in situ leach and marine phosphate by-product recovery) has remained fairly steady in absolute terms over the 1980-1986 period, whereas production by conventional (underground and open-pit) mining techniques peaked at 37.8 million pounds U_3O_8 in 1980, declined to 6.1 million pounds in 1985, and increased to about 8.9 million pounds in 1986 (Figure 5). Again, without the contribution of Energy Fuels' production from underground mines in the Arizona strip, conventional production would have been only about 4.4 million pounds U_3O_8 in 1986.

One of the more interesting features of recent US production is the trend in ore grade. The average grade of ore processed in conventional mills was approximately 0.12 percent U_3O_8 during the 1979-1984 period, increased to 0.16 percent in 1985, and rose to over 0.33 percent during 1986. This reflects the phasing-out of production from relatively lower-grade ores in open-pit mining, the "high-grading" of remaining underground deposits, and the dominance of high-grade ores from new underground mines of Energy Fuels and of Chevron Resources' Mt. Taylor deposit. For Energy Fuels, the ore is mined in Arizona, but shipped to Utah for milling. For Chevron, ore is mined in New Mexico and shipped to Texas for milling.

Inventories

One of the major factors responsible for the downturn in the uranium market price was the large excess of production over nuclear power generation requirements. In fact, until fairly recent times, annual production from US sources was about twice the annual consumption by the utility industry. This led to the buildup of large uranium inventories, which have only recently begun to decline (Figure 6). Inventories held by suppliers remained steady over the 1984-1986 period, and the modest decline in total inventories during this period has been due to a decline in the US utilities' share.

The inventory data collected by EIA's Uranium Industry Annual Survey include all chemical and physical forms of uranium that have not been irradiated in a nuclear power plant. Figure 7 shows the breakdown of US utility year-end inventories in the 1983-1986 period. The utility industry's inventory of uranium in fabricated fuel assemblies remained steady during the 1984-1986 period, whereas the inventory near the enrichment stage (as uranium at enrichers for processing, in "usage agreement" accounts at the US Department of Energy's [DOE] enrichment complex, or enriched UF_6) increased steadily over the 1983-1985 period.

None of the increase from 1983 to 1986 was due to

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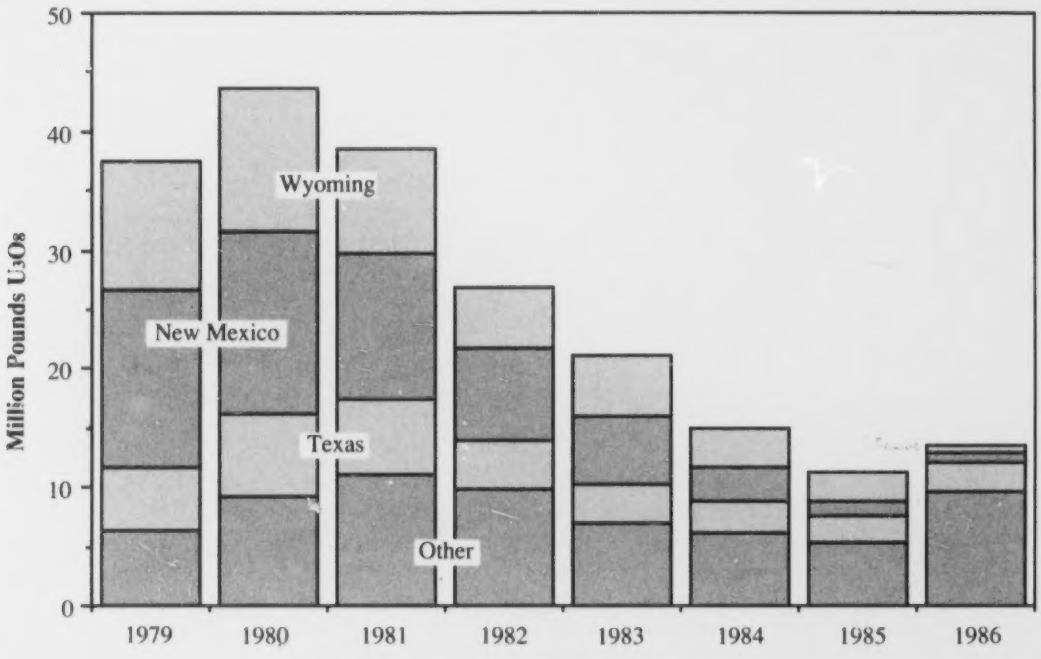

Figure 4
US PRODUCTION BY STATE

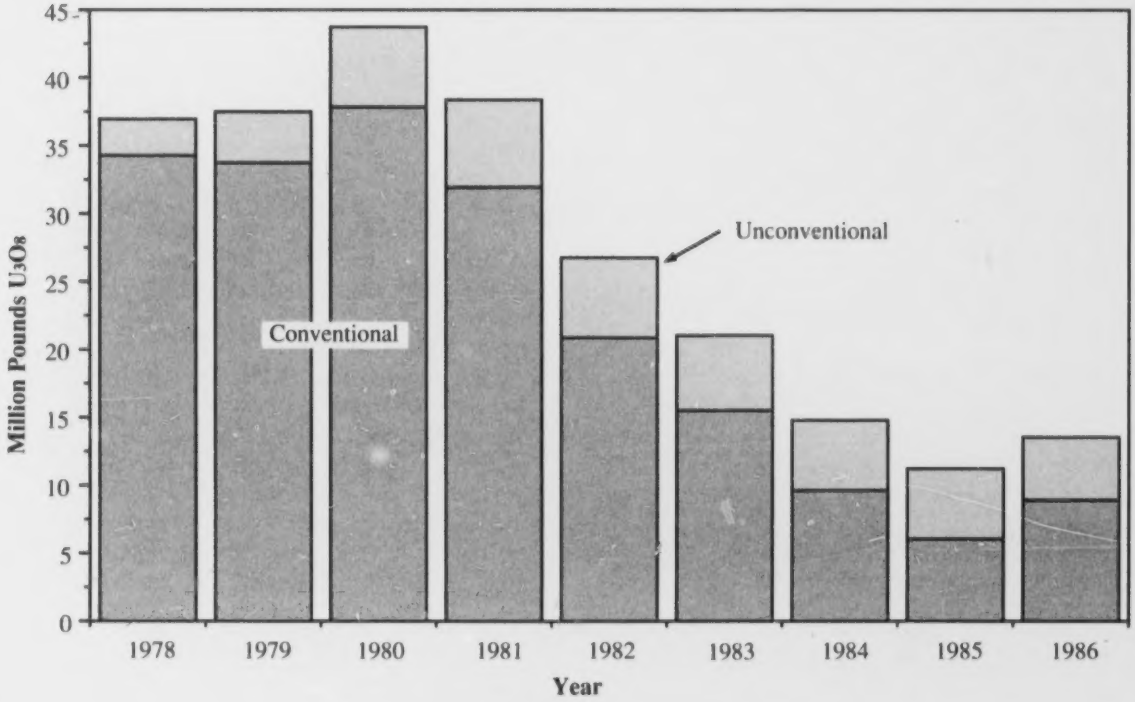

Figure 5
US PRODUCTION BY METHOD

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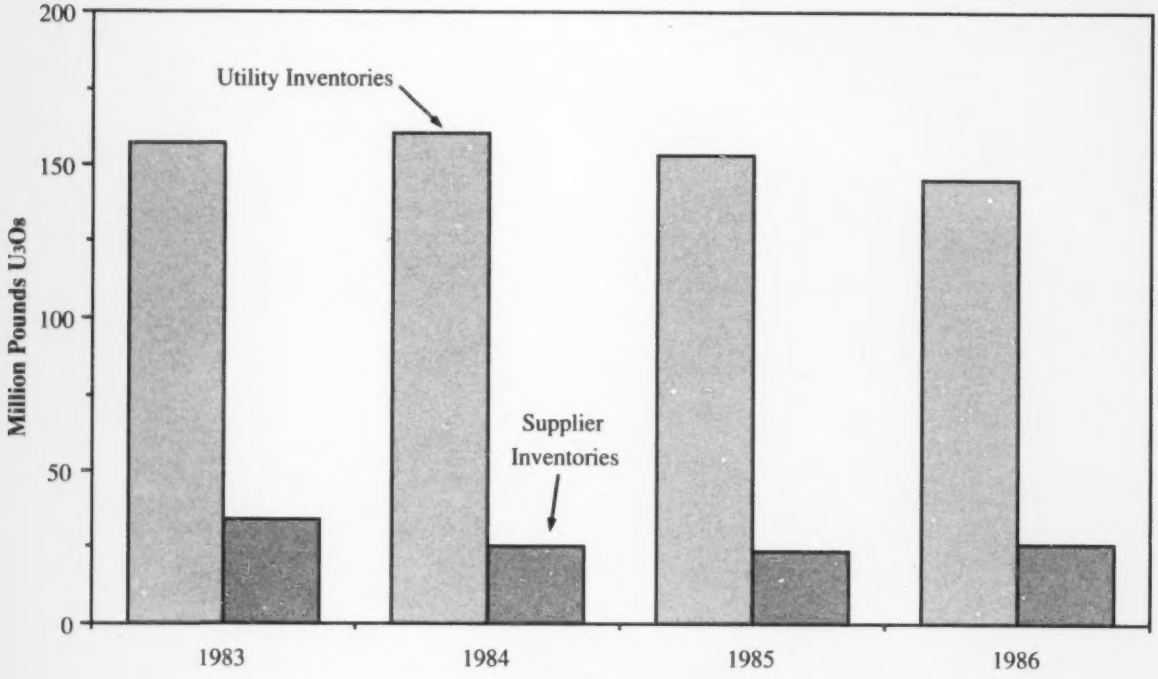

Figure 6
US COMMERCIAL URANIUM INVENTORIES

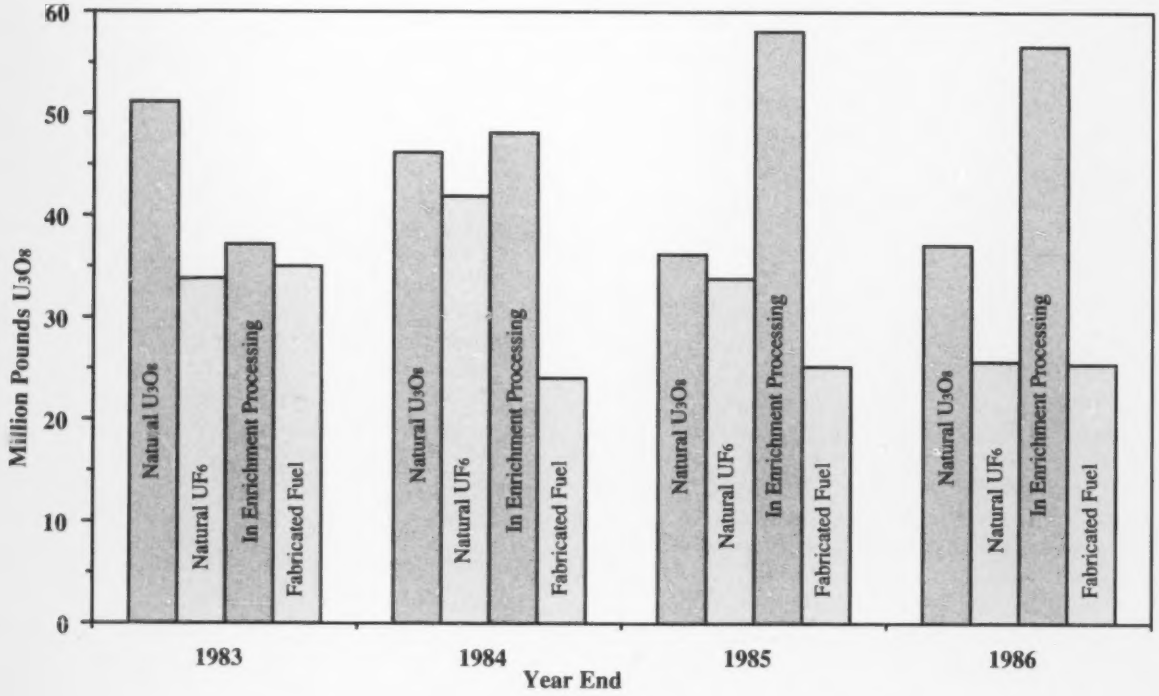

Figure 7
US UTILITY INVENTORIES

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enriched UF_6 in the utilities' possession; it was all due to increases in the other categories. As material moved into the enrichment stage, the inventory of natural uranium, as both U_3O_8 and UF_6, decreased.

The slight increase in natural uranium inventory during 1986 is perhaps due to the retention of US-origin material in anticipation of future restrictions on the use or enrichment of non-US-origin uranium and early delivery of South African import commitments (described below).

Uranium Contracting

According to EIA's statistics, the rate of new contracting for uranium supplies increased during 1986 to its highest level since 1982 (Figure 8). Over the five and one-half years ending June 30, 1987, imports accounted for about 60 percent of the quantity of uranium newly contracted for by US companies. Conversely, when contract cancellations and quantity adjustments each year are taken into account (Figure 9), there were net decreases in the quantity under contract to US suppliers for the 1984-1986 period, in contrast to net increases in each of these years for import commitments.

Figure 10 shows the net effect of all these new contracts and contract adjustments. The overall level and pattern of forward commitments between the ends of 1983 and 1986 are more or less unchanged. That is, the US utility industry has maintained a nearly constant level of forward commitments, by year, rather than increasing as would normally be expected. Thus, the overall level of commitments from new contracts has been almost offset by downward adjustments in old contracts.

This same feature holds for unfilled requirements (Figure 11). Unfilled requirements are defined by EIA as the amount of uranium the utility industry needs, over and above its current inventory and uranium purchase contracts, to meet projected uranium enrichment feed deliveries and to maintain a "desired" level of inventory. The major adjustments to unfilled requirements over the past 4 years have been reductions in the very near term. Of course, the level of unfilled requirements increases for more distant delivery years because utilities are less concerned about having more distant (and thus less certain) requirements under contract. This does not necessarily mean that each individual utility's forward commitments and unfilled requirements have remained constant over the period, but that the aggregate values have changed very little. All this points to more recent predictability for market requirements than in the past.

One parameter of constant interest in the USA is the structure of imports and import commitments. Figure 12 shows actual imports into the USA by country of origin. Imports in 1983 totaled 8.2 million pounds U_3O_8, of which 66 percent was Canadian origin, 24 percent was South African, and the balance was from various other sources. In 1986, US imports were 13.5 million pounds U_3O_8, of which 59 percent was Canadian and 41 percent was from other countries. To protect the confidentiality of the small number of firms involved in the South African imports, these imports were lumped into the "Other" category for 1986. However, a trend of increasing reliance on South Africa as a source of uranium seems apparent from this time series. It is likely that the level of US imports from South Africa will be drastically lower in 1987, due to the implementation of the US Comprehensive Anti-Apartheid Act of 1986, which prohibits the importation of South African ore or oxide.

In contrast to the increasing levels of actual imports from South Africa, reliance on South Africa for longer-term commitments seems to have tapered off in recent years. Even though South Africa is lumped into the "Other" category for 1986 forward commitments, the downward trend is clear from the data shown in Figure 13. There is a simple explanation for this apparent anomaly with South African imports. In fact, the total (past plus present) level of commitments for South African imports has not changed drastically in recent years, but the importers have taken early delivery in order to avoid the Anti-Apartheid Act restrictions that began in 1987. Finally, although Canada is the preferred country for US import commitments, the rapid increase in the absolute and percentage reliance on contracts with Australian suppliers for forward commitments is quite noticeable.

One significant development during 1986 was the sharp reduction in the level of uncommitted uranium available for sale by US suppliers, principally in the higher price categories (Figure 14). It seems evident that US producers with costs at or above $30 per pound U_3O_8 view themselves as being unable to compete with the lower cost producers over the next ten years. This view is generally consistent with most industry expectations of the price for a free market in uranium worldwide. However, an effective import restriction in the US could dramatically alter that outlook.

When compared to current unfilled requirements of US

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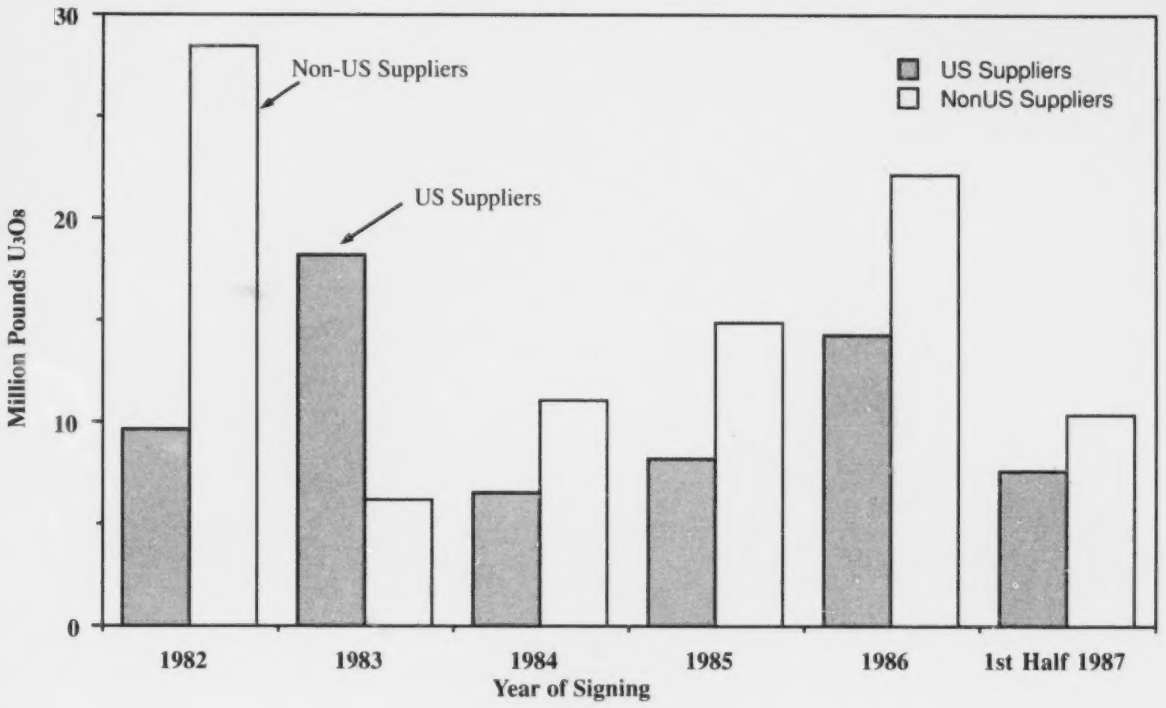

Figure 8
NEW CONTRACTS

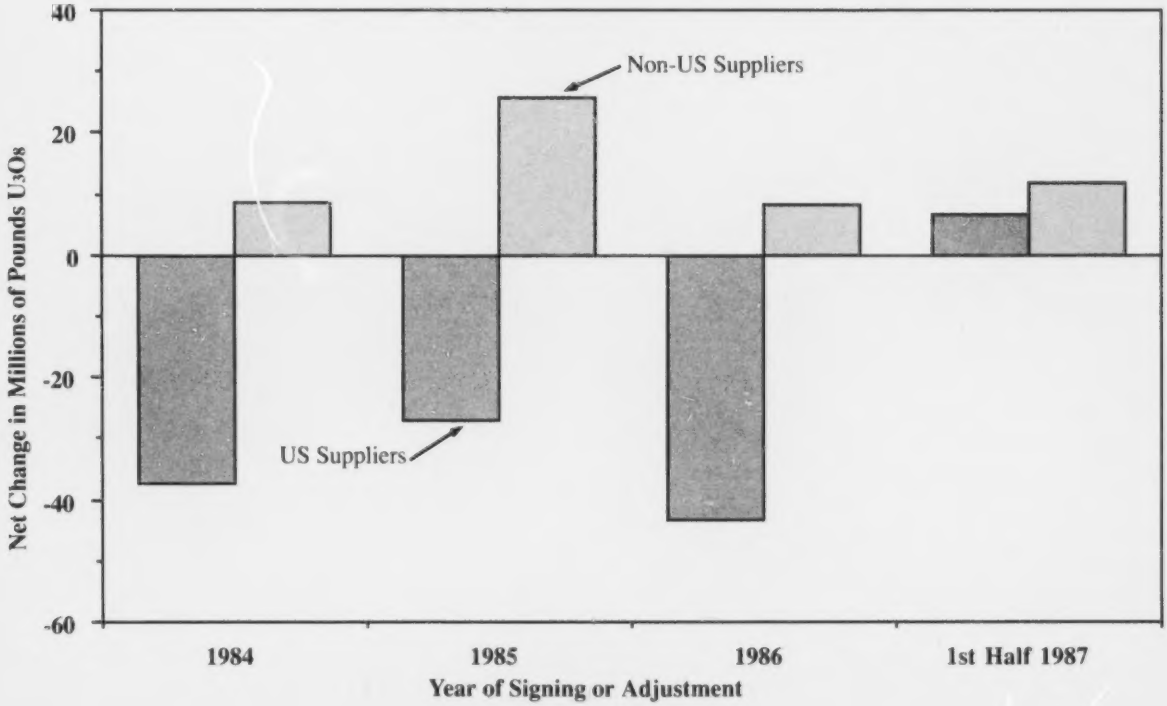

Figure 9
NET CHANGE IN CONTRACTS

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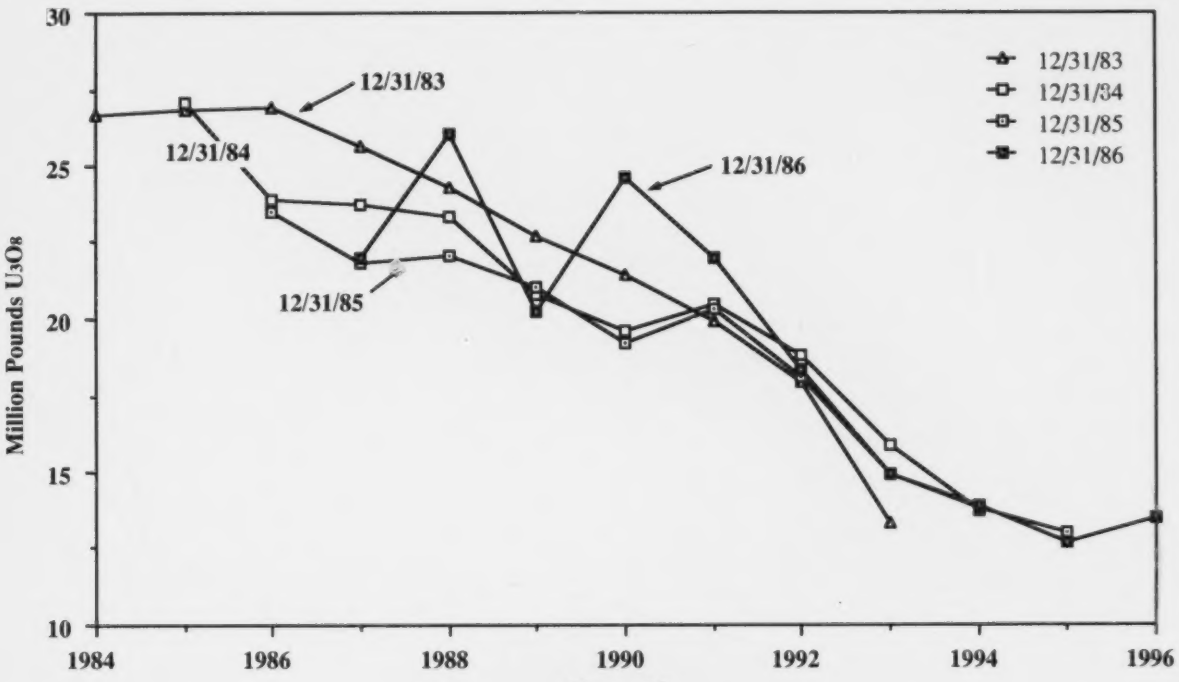

Figure 10
COMMITMENTS OF US UTILITIES

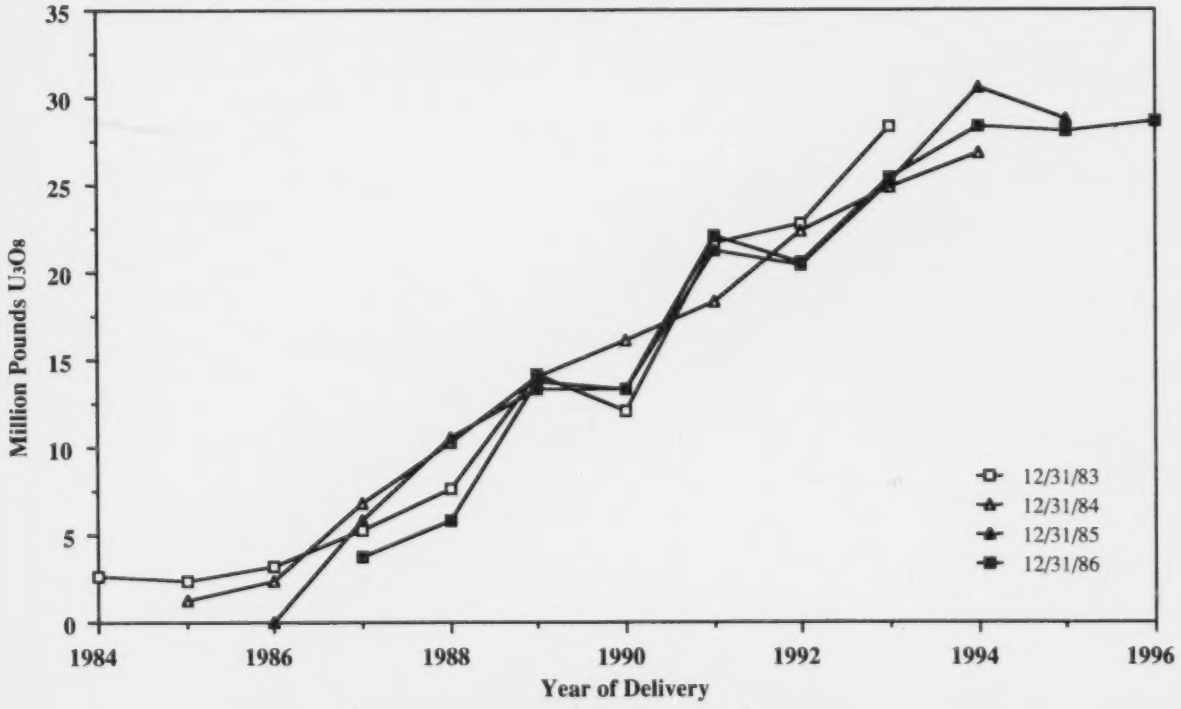

Figure 11
US UTILITY UNFILLED REQUIREMENTS

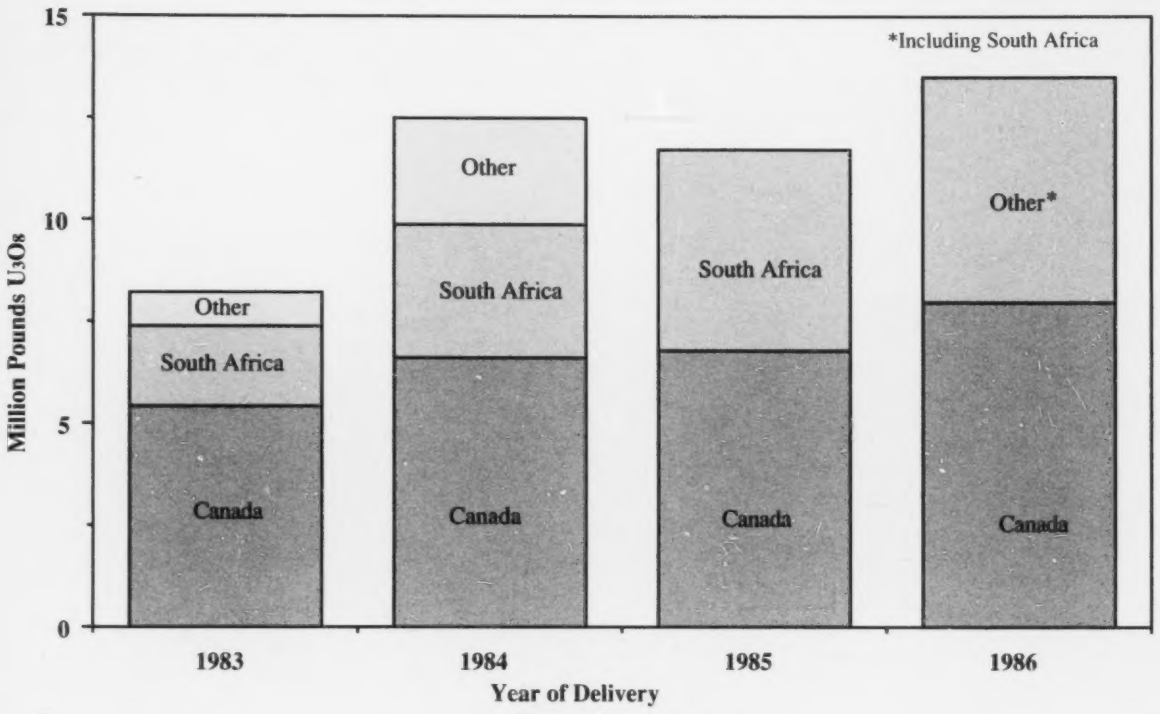

Figure 12
PAST US IMPORT DELIVERIES

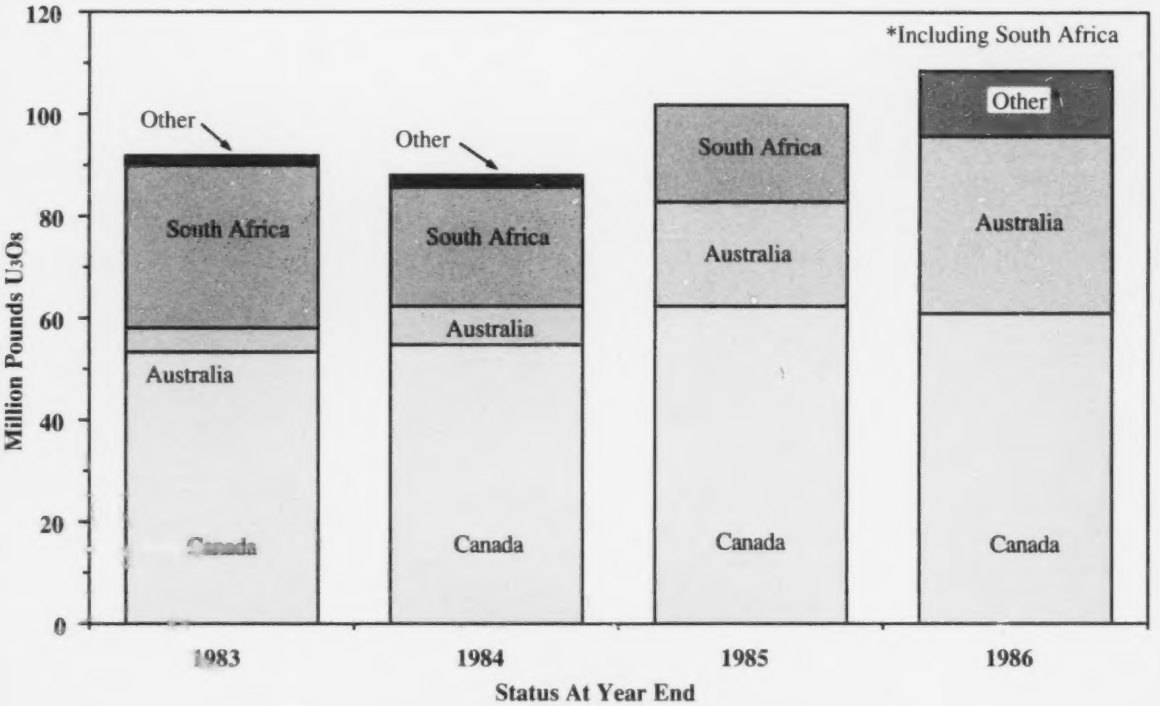

Figure 13
US IMPORT CONTRACTS FOR FUTURE DELIVERY

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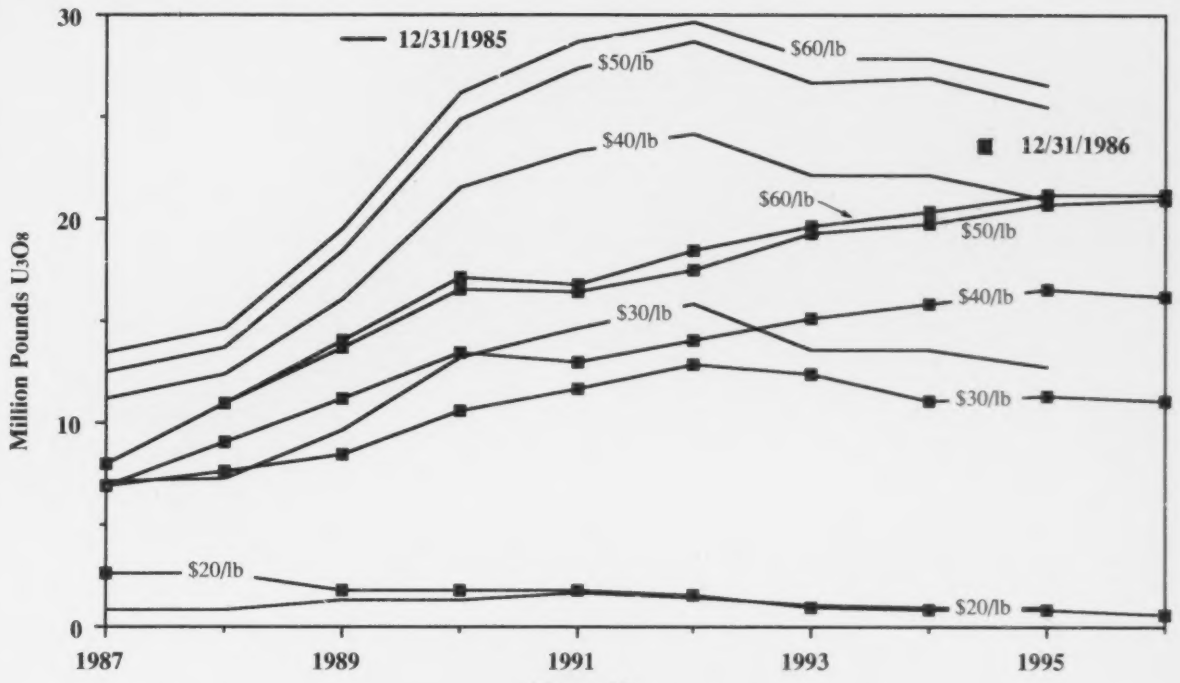

Figure 14
UNCOMMITTED US URANIUM AVAILABLE FOR SALE
(1985 vs. 1986)

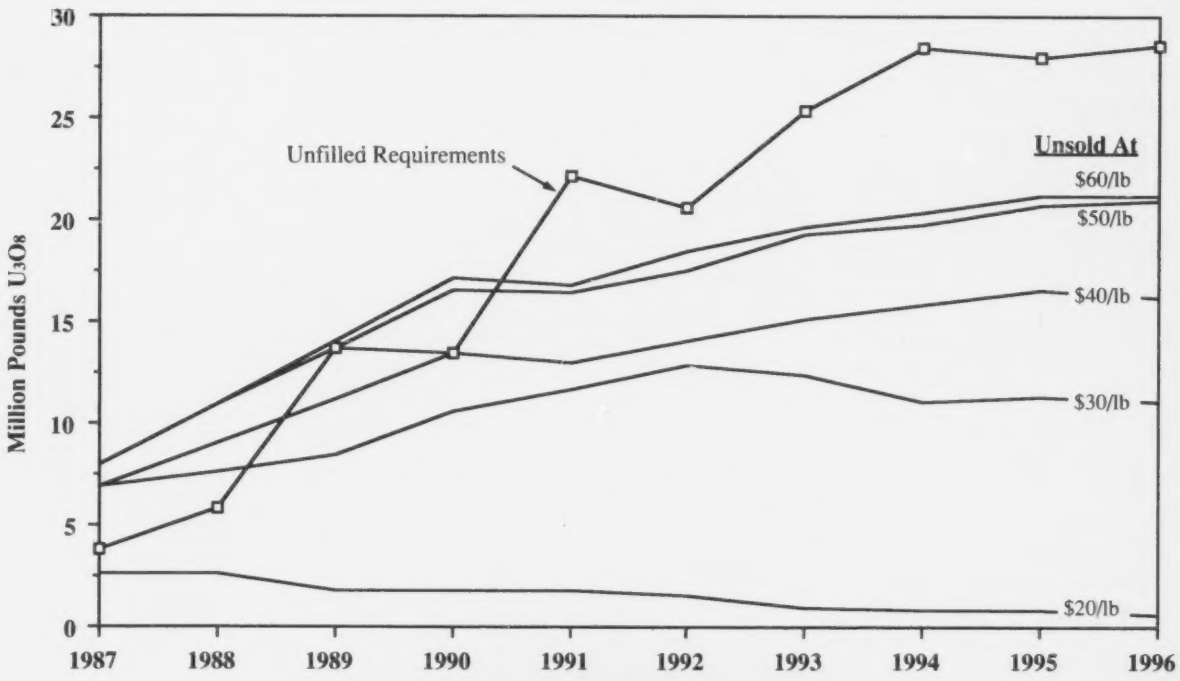

Figure 15
YEAR-END 1986 UNFILLED REQUIREMENTS
vs. URANIUM AVAILABLE FOR SALE

utilities (Figure 15), the uncommitted uranium reported as available for sale by US companies would not be sufficient to supply US needs on an annual basis beyond about 1990, even at price levels (in constant end-of year 1986 dollars) of $60 per pound U_3O_8. This is in clear contrast to the situation one year earlier, when uncommitted uranium available for sale would easily have been sufficient to meet US unfilled requirements. (Nuexco's opinion is that much more uranium could be made available than is reported here, if the market price rose to $60 per pound and stayed there for a prolonged period.)

The secondary market for natural uranium in the USA was healthy in 1986, as shown in Figure 16. The bulk of secondary market activity (10.3 million pounds of U_3O_8) represented sales and exchanges among US suppliers, followed by 7.2 million pounds of supplier imports.

Implications for the 1986 Viability Determination

By law, the Secretary of Energy determines the US uranium industry's viability, on the basis of information developed and reported by the EIA each year. In his deliberations, the Secretary considers four basic criteria, established in a 1983 public rulemaking.

1. Resource Capability: whether US economic reserves are sufficient to supply US needs over a projected ten-year period.

2. Supply-Response Capability: whether US uranium production capacity is sufficient to supply US needs over a ten-year period.

3. Financial Capability: whether the US uranium industry's financial performance will permit the maintenance of an adequate supply-response capability.

4. Import Commitment Dependency: whether uranium import contracts constitute more than 37.5 percent of US requirements for any two-consecutive-year period.

For the first three of these criteria, US "needs" are defined as the requirement for US production in the event of a disruption of uranium import supplies — so-called "uranium supply security requirements." The Secretary has historically focused on an assumed one-third disruption of contracted imports at a point in time, with the additional condition that no further import contracts would be signed. EIA has generally developed the requisite information on these criteria by assuming a hypothetical "current" disruption on January 1 of the year following the year in which the determination decision is being made, and a "projected" disruption at some more distant date. For the viability determination being made this year, involving the uranium industry's viability status for the year 1986, the current disruption would occur on January 1, 1988. The year of the more distant "projected" disruption is usually chosen to be a date at which dependence on imports is expected to be the greatest and beyond which excess inventory levels are expected to be small. The industry's viability status for the year 1985 assumed a "projected" disruption on January 1, 1991.

Although it is not possible to foresee what conditions EIA will assume and analyze for the projected disruption status, the data provided in the two EIA presentations can be used to estimate the "current disruption" status of the criteria. The following represents Nuexco's analysis of the data relevant to these criteria.

Resource Capability

Traditionally, this criterion has not been the subject of much concern in the viability determination, because "economic reserves" as measured by EIA have always exceeded the US utility industry's needs under the one-third (and usually even the two-thirds and total import) disruption scenario. Although EIA collects economic reserves data directly from the uranium industry, such data are not used as the basis for this criterion in EIA's analysis. This is primarily because the legal language concerning this criterion specifies not whether economic reserves exceed needs, but rather whether domestic economic reserves can *supply* all future needs for a future ten-year period. Thus, EIA has preferred to use the US uranium industry's contracts for future delivery and uncommitted available for sale, both cumulated over the period in question, as the measure of supply from economic resources.

Using the committed and uncommitted data shown above (with accounting for the small level of export commitments), Nuexco's estimate of the current status of Resource Capability is shown in Figure 17. In contrast to previous years, economic reserves (as defined in previous EIA viability reports) do not appear to be producible to meet US uranium requirements in the event of a one-third disruption of US import supplies. Even the reported economic reserves (i.e., reported by the US uranium industry to EIA) only marginally equal ten-year forward US needs in the event of a one-third import disruption.

Supply - Response Capability

In the past two determinations of nonviability, supply

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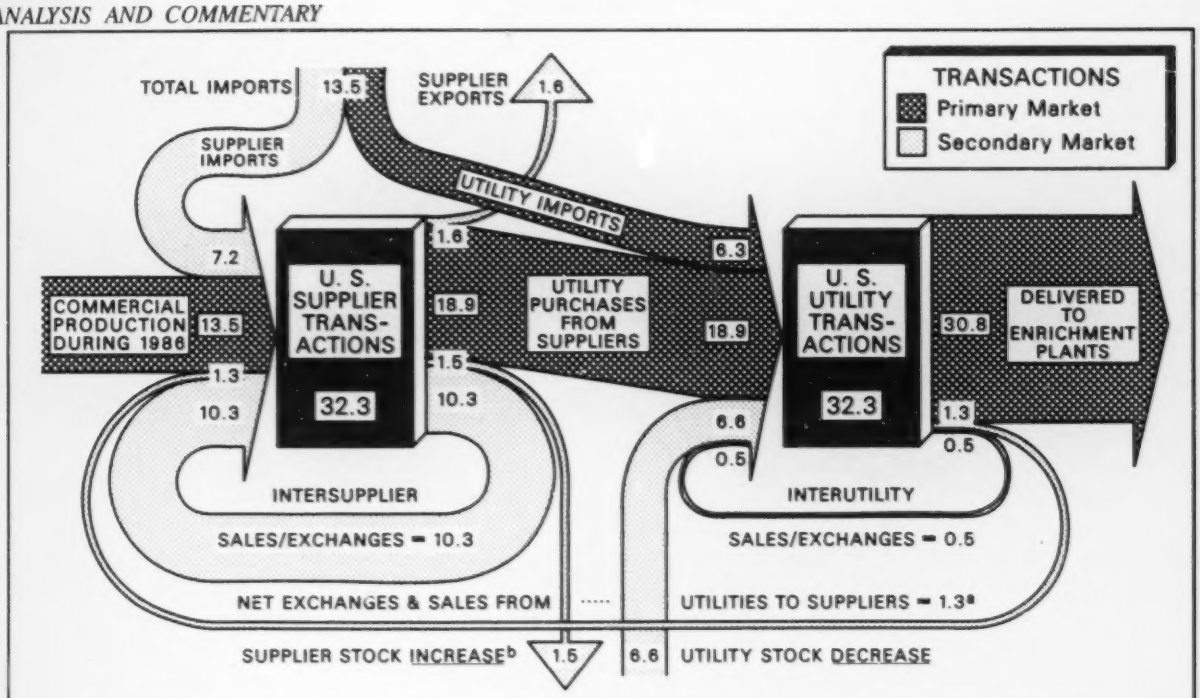

[a] Excludes 1.4 million pounds that were delivered to enrichment plants in exchange with suppliers.

Source: Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey", 1986.

Figure 16
NATURAL URANIUM MARKET ACTIVITY
DURING 1986

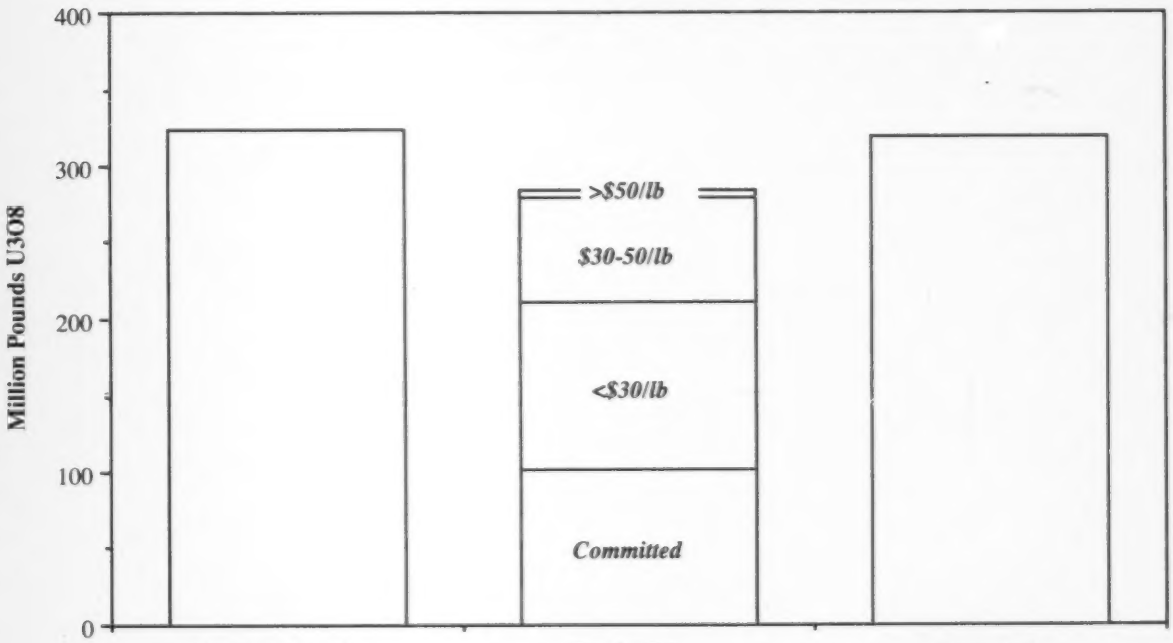

Figure 17
RESOURCE CAPABILITY

response capability for a potential future import disruption has been a major concern. Under EIA's projections, the US industry would not have had the ability to meet US needs over a ten-year import disruption beginning in 1991. On the other hand, this concern was always couched in terms of a concern about potential future conditions, because for each of these determinations the supply response capability for a "current disruption" had always been adequate.

The situation changed during 1986, as shown in Figure 18. Because of the reduction in both domestic uranium industry commitments and uncommitted uranium available for sale, the US uranium industry appears to be no longer capable of supplying US needs in the event of a ten-year-long, one-third disruption of import supplies. If the Secretary of Energy was concerned in the past about the potential development of this condition, it is now clear that the concern was justified. Fortunately, the concern is primarily for the latter half of such a disruption, as the uranium industry appears to be able to supply needs over the first five years of the disruption period.

Financial Capability

A major factor in Secretary of Energy Herrington's determination that the US uranium industry was not viable for the years 1984 and 1985 was the industry's dismal financial performance in those years. As seen in Figure 19, the industry's operating and net income improved for the industry as a whole, compared to 1984 and 1985, but only in the sense that the industry's losses were smaller. Operating income is the excess of gross revenues from U_3O_8 sales over direct operating expenses, whereas net income reflects the further effects of financing (interest) expenses, income taxes, and extraordinary items, such as the massive writedowns or writeoffs in the value of uranium property, physical plant and equipment (PP&E) that occurred in 1984 and 1985. These one-time writedowns and writeoffs reflected the recognition by some firms that recovery of their investment in these uranium facilities would not occur in the foreseeable future because of the expected persistence of poor market conditions for the producing industry.

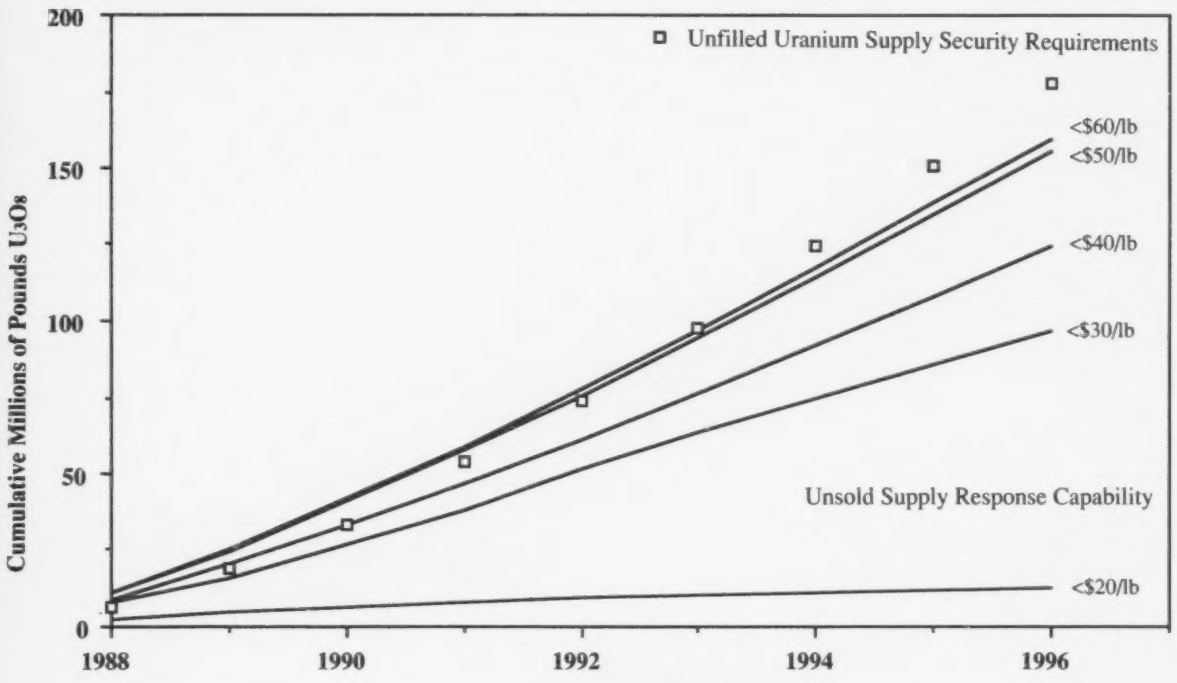

Figure 18
SUPPLY—RESPONSE CAPABILITY

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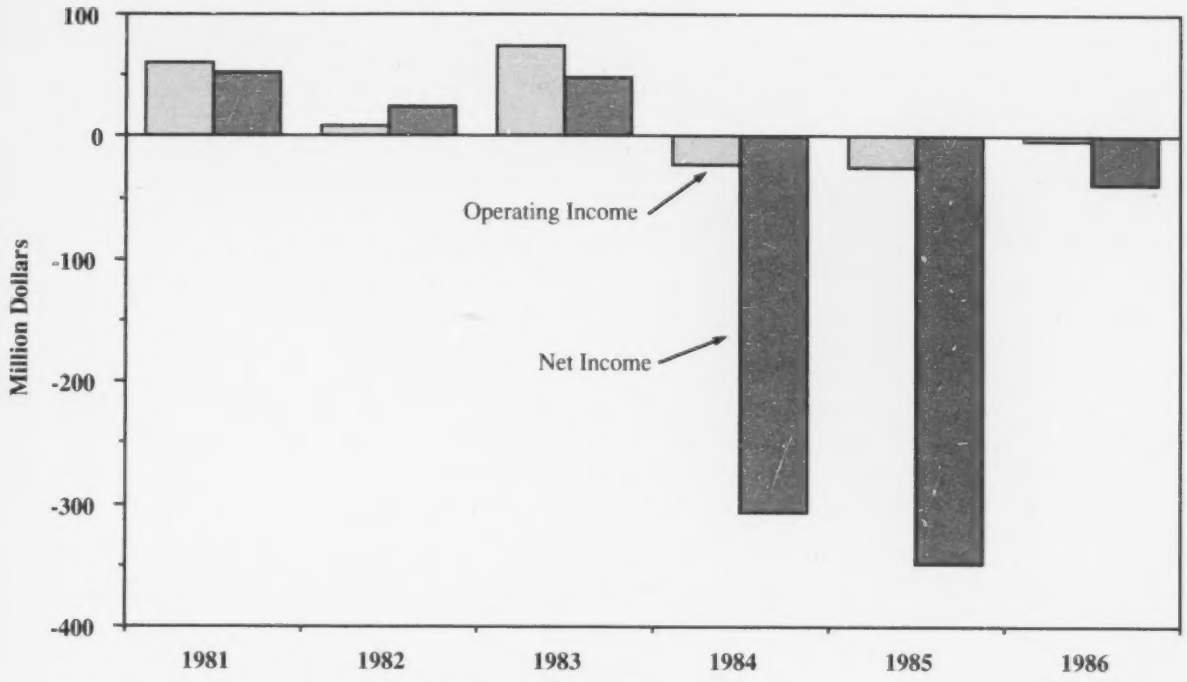

Figure 19
US URANIUM INDUSTRY INCOME

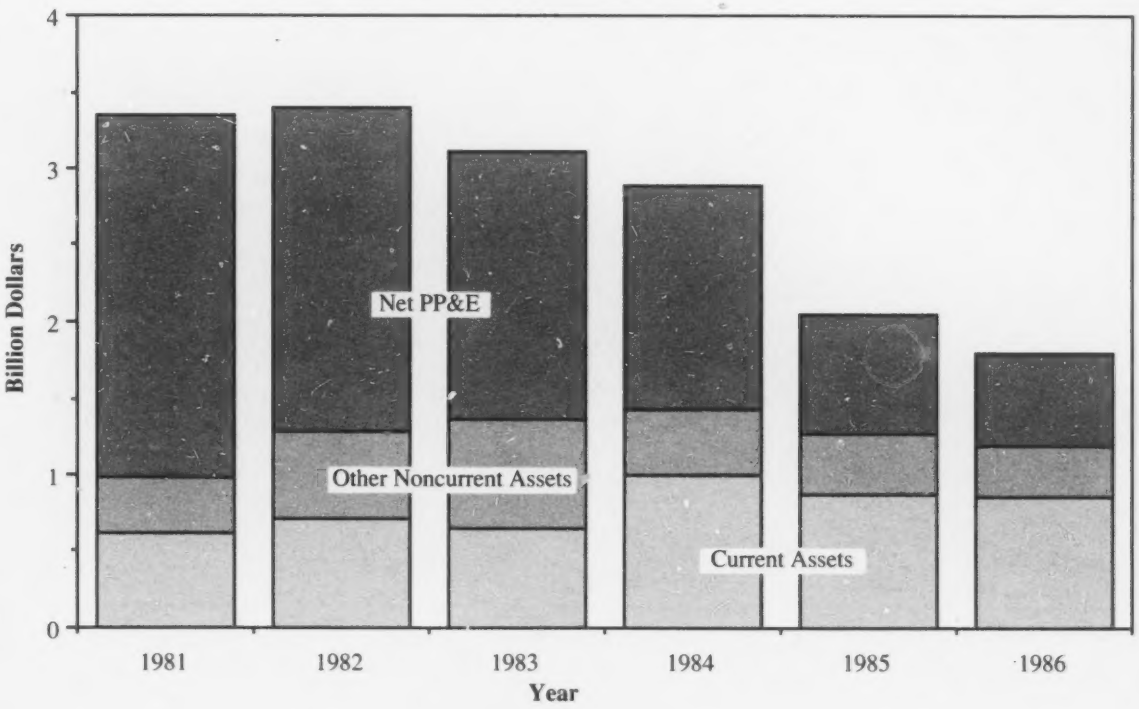

Figure 20
US URANIUM INDUSTRY ASSETS

As can be seen in Figure 20, this writedown process abated somewhat during 1986, but nonetheless continued. The net value (after accumulated depreciation, depletion, and amortization) of the industry's PP&E declined by almost $700 million during 1985 (about 47 percent of the value of PP&E at the beginning of that year); net assets as PP&E declined less than $200 million (or by about one-quarter) during 1986. New investment in PP&E during 1986 was about $20 million, and depreciation, depletion and amortization accounted for about $70 million. Thus, about $150 million of the decline in PP&E presumably represented one-time writedowns, writeoffs and losses during other dispositions (sales) of properties.

Import Commitment Dependency

This criterion is not based on an assumed import supply disruption; it measures the annual committed degree of reliance on import supplies, as a percentage of normal requirements. Normal requirements have historically been taken to mean enrichment feed requirements of the US utility industry. This criterion has not been cited in past nonviability determinations as a causative factor, although two factors are worth mentioning here. First, commitments for future imports in each of the past viability studies have not exceeded 37.5 percent for any two-consecutive year period, but EIA has consistently projected that future import levels would evolve to exceed this threshold.

Second, it has been typical in the past that import commitments for delivery in the next year following a viability determination have increased during the year, such that actual imports during the year exceed 37.5 percent of requirements by the end of the year. The year 1986 was no exception to this trend, as shown in Figure 21. At the beginning of 1986, import commitments for 1986 delivery were at a level of 10.3 million pounds U_3O_8, or 32-35 percent of projected enrichment feed deliveries. However, by the end of 1986, actual imports for the year were 13.5 million pounds U_3O_8, or 44 percent of requirements. A good deal of the increase is accounted for by the advance delivery of South African imports.

Although the import commitment dependency for the years 1988-1990 increased from the end of 1985 to the end of 1986, such levels were still well below the 37.5-percent threshold. Presumably, EIA will again project future import levels to exceed the 37.5-percent figure.

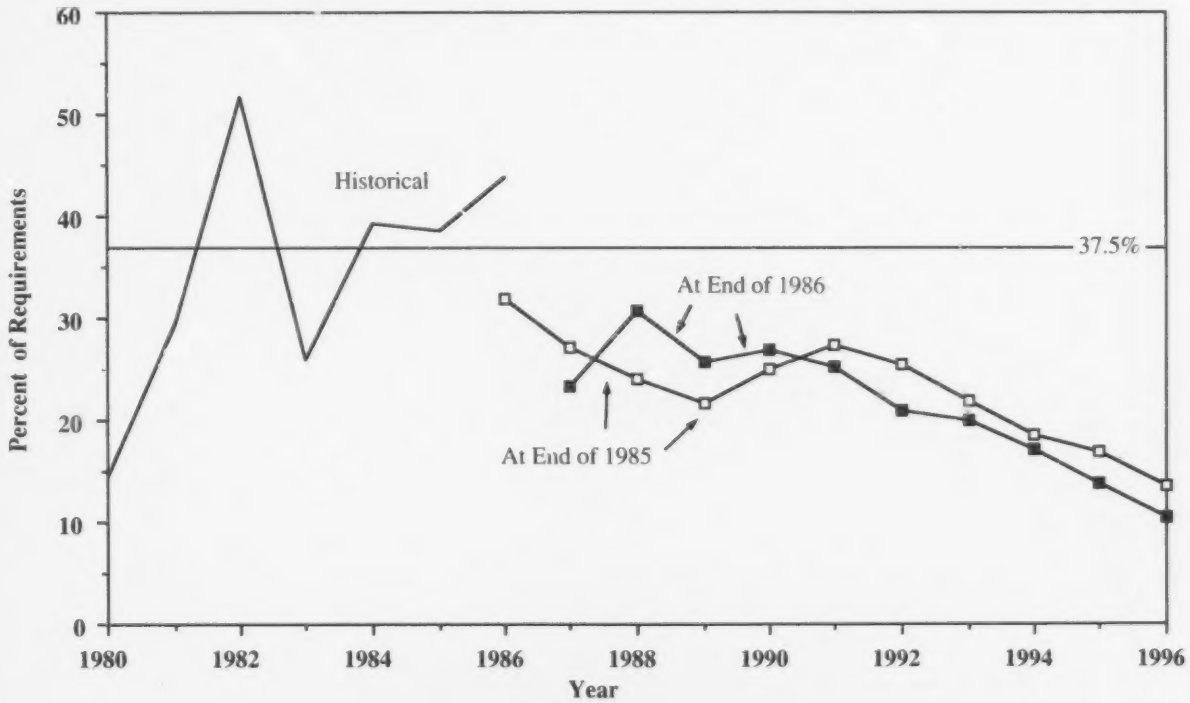

Figure 21
IMPORT COMMITMENT DEPENDENCY

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Conclusions

During 1986, the US uranium production industry experienced a slowdown in its rate of decline. Production was up slightly primarily due to the milling activity of one high-grade producer. For the third year in a row, the industry as a whole experienced operating and net losses, although not at the same large level as the previous two years. More and more companies have dropped out of serious contention as long-term US producers, but several new companies are beginning operations in the near future. Generally these new producers are involved in more economical unconventional production methods.

US utility inventories continue to decline slowly, and their inventories are increasingly in the more advanced stages of upgrading. New US utility commitments for uranium are heavily weighted toward non-US suppliers, and in fact the overall level of commitments with US producers has declined substantially over the past several years.

Net contract cancellations and downward adjustments with US producers have been almost counterbalanced by increasing US utility commitments with non-US suppliers, such that the overall annual level of commitments in place for future delivery has remained fairly steady. The level of US utilities' unfilled requirements has also remained steady. Canada maintains its traditional place as the major supplier of US imports, with South Africa in second place. For longer-term import commitments, Australia is supplanting South Africa as the second choice of US utilities (after Canada).

The "viability" of the US uranium industry (for purposes of current Federal law and regulations) seems no more assured than in the previous two years, although the factors involved are changing. The level of future commitments for imports (as a percentage of US requirements) does not exceed 37.5 percent, but actual imports for the past three years have somewhat exceeded that threshold. As more companies have left the US uranium industry, the remaining industry was less unprofitable than in the previous two years, but also is less able to supply US needs in the event of an import supply disruption. If the US industry was not viable in 1984 and 1985, it cannot be declared viable for 1986 unless DOE changes the rules, or the implementation of the existing rules.

(Note: The EIA's "Uranium Industry Annual: 1986" is scheduled for release as Report DOE/EIA-0478(86) on October 23. For more information on its availability, call the National Energy Information Center, at (202)586-8800.)

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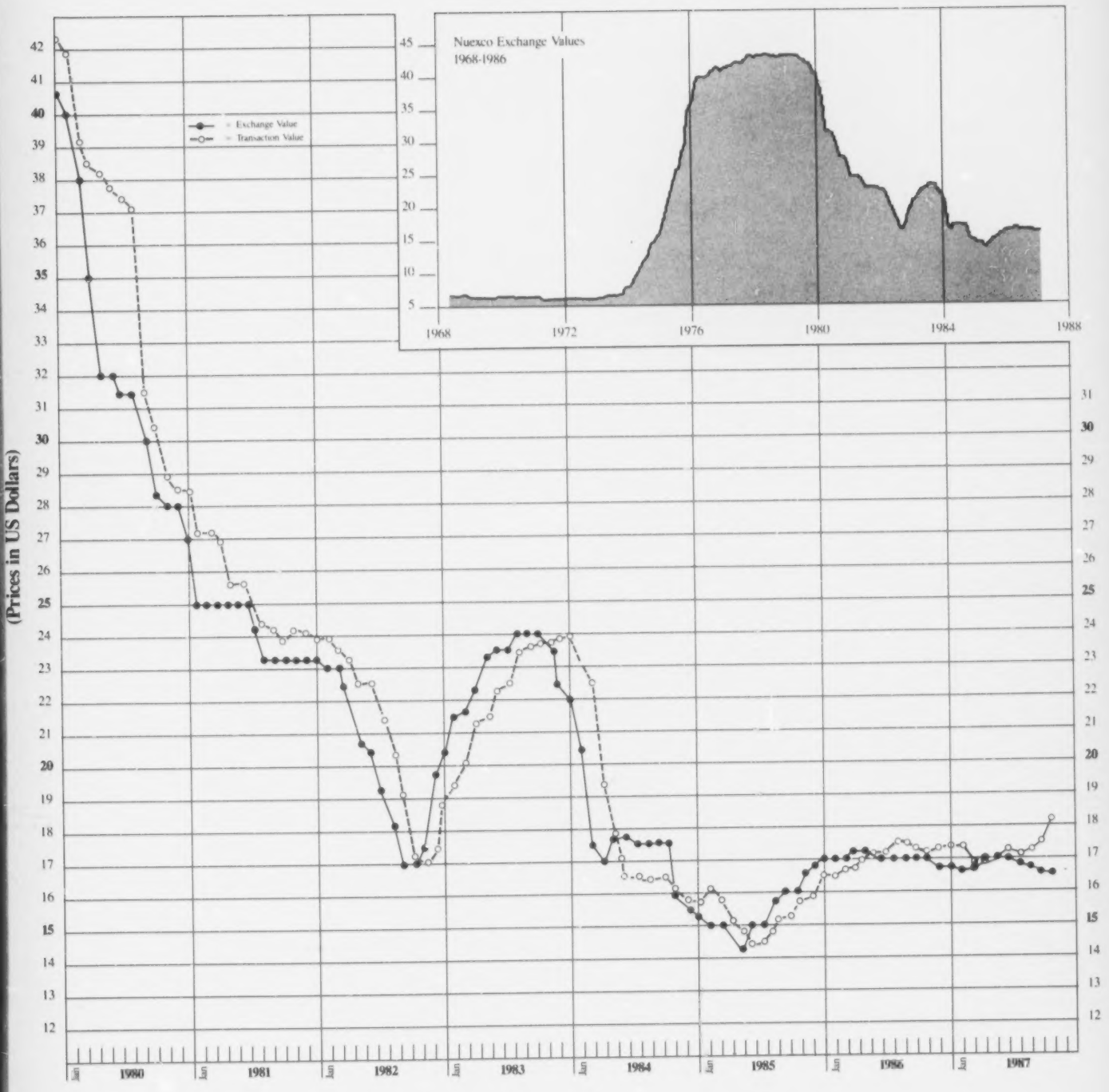
HISTORICAL MARKET DATA



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HISTORICAL MARKET DATA

HISTORICAL EXCHANGE VALUES

Determined as of the last day of the month indicated (US Dollars/lb. U_3O_8)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1968	—	—	—	—	—	—	—	6.35	6.35	6.40	6.45	6.50
1969		6.35	6.10	6.10	6.25	6.25	6.20	6.20	6.15	6.15	6.15	6.20
1970	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.20	6.15	6.15	6.15	6.15
1971	6.20	6.20	6.20	6.20	6.15	6.05	6.00	5.95	5.95	5.95	5.95	5.95
1972	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95
1973	5.95	6.00	6.10	6.20	6.45	6.50	6.50	6.50	6.50	6.50	6.75	7.00
1974	7.70	7.90	8.00	9.00	9.50	10.50	11.50	12.00	12.50	14.00	14.75	15.00
1975	16.00	16.00	18.00	20.00	21.00	23.00	24.70	26.00	26.00	28.50	30.00	35.00
1976	35.20	37.00	39.25	40.00	40.00	40.00	40.00	40.40	41.00	41.00	41.50	41.00
1977	41.35	41.50	41.60	41.60	42.00	42.25	42.25	42.25	42.40	42.75	43.20	43.20
1978	42.90	43.25	43.25	43.25	43.40	43.40	43.40	43.10	43.25	43.00	43.25	43.25
1979	43.25	43.25	43.25	43.25	43.25	43.00	42.70	42.70	42.20	42.20	41.00	40.75
1980	40.00	38.00	35.00	32.00	32.00	31.50	31.50	30.00	28.50	28.00	28.00	27.00
1981	25.00	25.00	25.00	25.00	25.00	24.25	23.50	23.50	23.50	23.50	23.50	23.50
1982	23.00	23.00	22.50	20.75	20.50	19.25	18.25	17.00	17.00	17.50	19.75	20.25
1983	21.50	21.75	22.25	23.25	23.50	23.50	24.00	24.00	24.00	23.50	22.50	22.00
1984	20.50	17.50	17.00	17.75	17.75	17.50	17.50	17.50	17.50	16.00	15.50	15.25
1985	15.00	15.00	15.00	14.25	15.00	15.00	15.75	16.00	16.00	16.50	16.75	17.00
1986	17.00	17.00	17.25	17.25	17.00	17.00	17.00	17.00	17.00	17.00	16.75	16.75
1987	16.65	16.75	17.00	17.00	17.00	16.90	16.75	16.65	**16.65**			

HISTORICAL TRANSACTION VALUES

Determined as of the last day of the month indicated (US Dollars/lb. U_3O_8)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1976	—	—	—	—	39.60	39.70	39.70	40.40	40.30	40.60	40.70	40.70
1977	41.30	41.30	41.40	41.50	42.80	42.90	43.00	42.60	42.50	42.80	42.90	42.90
1978	43.10	43.30	43.70	43.60	43.60	43.20	43.30	43.40	43.40	43.60	43.40	43.70
1979	43.60	43.80	43.70	43.40	43.60	43.70	43.70	43.60	43.60	43.60	43.50	42.30
1980	42.00	39.30	38.60	38.40	37.90	37.60	37.30	31.30	30.60	29.00	28.70	27.70
1981	27.20	27.20	27.00	25.70	25.70	24.50	24.40	24.30	23.90	24.10	24.10	24.00
1982	24.00	23.70	23.40	22.60	22.70	21.50	20.30	19.10	17.30	17.00	17.55	18.80
1983	19.35	20.00	21.35	21.40	22.35	22.45	23.50	23.60	23.65	23.65	23.85	23.85
1984	23.05	22.50	19.25	17.90	17.00	16.50	16.60	16.40	16.55	16.05	15.90	15.90
1985	16.20	15.70	15.05	14.90	14.45	14.60	14.75	15.10	15.10	15.75	15.80	16.55
1986	16.55	16.70	16.70	17.10	17.05	17.20	17.50	17.45	17.35	17.25	17.30	17.35
1987	17.35	16.90	16.95	17.00	17.20	17.10	17.30	17.55	**18.20**			

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HISTORICAL CONVERSION VALUES

Determined as of the last day of the month indicated (US Dollars/lb. U in UF_6)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1981	1.20	1.20	1.20	1.40	1.15	1.15	1.15	1.10	1.10	1.10	1.20	1.20
1982	1.20	1.20	1.20	1.20	1.00	1.00	1.00	0.90	1.10	1.60	1.45	1.45
1983	1.20	1.40	1.40	1.20	1.20	1.20	1.10	1.10	1.00	0.60	0.60	0.60
1984	0.60	0.30	0.80	0.80	0.80	0.00	0.00	0.80	1.00	1.00	0.80	0.80
1985	1.00	1.00	1.00	1.50	1.50	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1986	1.60	1.80	1.90	1.80	1.80	1.80	1.80	1.90	1.90	1.90	1.80	1.80
1987	1.80	1.80	1.80	1.80	1.80	1.80	1.90	1.90	**1.90**			

HISTORICAL UF_6 VALUES

Determined as of the last day of the month indicated (US Dollars/kg. U in UF_6)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	—	—	—	40.50	42.50	42.50	44.00	44.50	44.50	46.00	46.00	47.00
1986	47.00	48.00	48.00	48.50	48.25	48.25	48.25	48.00	48.00	48.00	48.00	47.75
1987	47.75	48.00	48.00	48.00	47.75	47.75	47.50	47.00	**46.75**			

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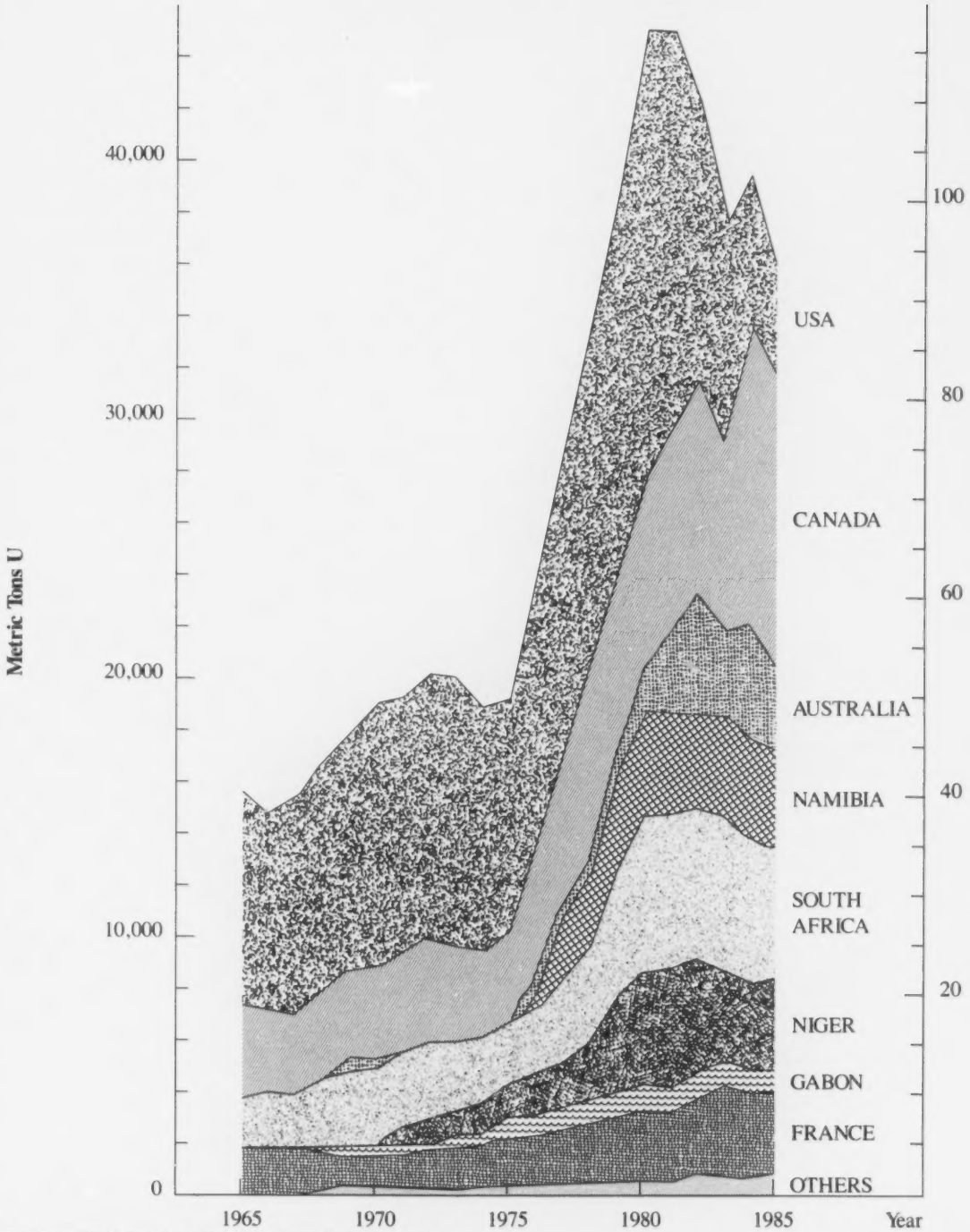
HISTORICAL MARKET DATA

HISTORICAL WOCA[1] URANIUM PRODUCTION[2]
(Compiled by OECD/IAEA Joint Report[3])



[1]WOCA = World Outside of Centrally-planned Economic Areas.

[2]1985 production data are preliminary.

[3]A joint report issued biennially by the OECD Nuclear Energy Agency and the International Atomic Energy Agency.

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US URANIUM MARKETING ACTIVITIES STATISTICS[1]
(Compiled from data published by the US Energy Information Administration)

Year	Total Production[2] (million pounds U_3O_8)	Deliveries to Domestic Utilities[3] (million pounds U_3O_8)	Average Price of Delivered Uranium ($/lb. U_3O_8)	Quantity of Uranium Imported[4] (million pounds U_3O_8)	Average Price of Imported Uranium ($/lb. U_3O_8)	Quantity of Uranium Exported (million pounds U_3O_8)
1976	25.5	n/a	n/a	3.6	n/a	1.2
1977	29.9	n/a	n/a	5.6	n/a	4.0
1978	37.0	n/a	n/a	5.2	n/a	6.8
1979	37.5	33.0[5]	$23.85[5]	3.0	n/a	6.2
1980	43.7	35.0[5]	$28.15[5]	3.6	$43.10	5.8
1981	38.5	32.6[5]	$34.65[5]	6.6	$32.90	4.4
1982	26.9	27.1	$38.37	17.1	$27.23[6]	6.2
1983	21.2	24.2	$38.21	8.2	$26.16	3.3
1984	14.9	22.5	$32.65	12.5	$21.86	2.2
1985	11.3	21.7	$31.43	11.7	$20.08	5.3

[1]Sources: 1979: US Department of Energy, Assistant Secretary for Resource Applications, Office of Uranium Resources and Enrichment, *Survey of United States Uranium Marketing Activity*, DOE/RA-0053 (Washington DC, July 1980). 1980-1981: US Department of Energy, Assistant Secretary for Nuclear Energy, Office of Uranium Enrichment and Assessment, *Survey of United States Uranium Marketing Activity*, DOE/NE-0013 and DOE/NE-0013/1 (Washington DC, June 1981 and July 1982). 1982: Energy Information Administration, *1982 Survey of United States Uranium Marketing Activity*, DOE/EIA-0403 (Washington DC, September 1983). 1983: Energy Information Administration, *Survey of United States Uranium Marketing Activity 1983*, DOE/EIA-0403(83) (Washington DC, August 1984). 1984: Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey" (1984). 1985: Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey" (1985).

[2]Sources: 1976-1982: US Department of Energy, Grand Junction Area Office, *Statistical Data of the Uranium Industry*, GJO-100 (Grand Junction, Colorado, January 1983). 1983: Calculated by the staff of the Nuclear and Alternate Fuels Division, Office of Coal, Nuclear, Electric and Alternate Fuels, Energy Information Administration, from US Department of Energy, Grand Junction Area Office data files. 1984: Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey" (1984). 1985: Energy Information Administration, Form EIA-858, "Uranium Industry Annual Survey" (1985).

[3]Excludes direct imports by domestic utilities.

[4]Includes imports by domestic utilities and domestic suppliers.

[5]Includes delivery commitments to domestic utilities and agents.

[6]Computation of quantity-weighted average price excludes the quantity associated with a large exchange (swap) transaction that occurred in 1982.

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HISTORICAL MARKET DATA

VOLUME AND PRICE OF URANIUM DELIVERIES TO THE EUROPEAN COMMUNITY[1]
(Compiled from data published by the Euratom Supply Agency)

Year	Volume of Deliveries to the EC[2] (in MTU)	Percentage of Deliveries Made Under Spot Contracts	Medium or Long-Term Contracts[3]		Spot Contracts[3]	
			Average Price in ECU per pound U_3O_8	Average Price in US Dollars per pound U_3O_8	Average Price in ECU per pound U_3O_8	Average Price in US Dollars per pound U_3O_8
1977	n/a	n/a	n/a	n/a	n/a	$41.00
1978	n/a	n/a	n/a	n/a	n/a	$43.00
1979	10,000	n/a	n/a	n/a	n/a	$44.50
1980	8,600	n/a	n/a	$36.00	n/a	$35.00
1981	13,000	less than 10	n/a	$33.25	n/a	$28.00
1982	12,500	less than 10	ECU 32.25	$32.00	ECU 24.25	$24.00
1983	13,500	less than 10	ECU 34.75	$31.00	ECU 26.00	$23.25
1984	11,000	less than 10	ECU 37.75	$29.75	ECU 24.50	$19.25
1985	11,000	11.5	ECU 38.00	$29.00	ECU 19.50	$15.00

[1]The twelve European Community member nations are Belgium, Denmark, France, the Federal Republic of Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom; prior to January 1986, Spain and Portugal were not members of the EC.

[2]The only deliveries taken into account are those made to final users, namely the electric utilities or their procurement organizations; deliveries to middlemen or fuel cycle companies are not included. The sales between utilities in the Community are also excluded. The quantities covered are those which were entered into accounting records during the year stated.

[3]For deliveries made under medium or long-term contracts (i.e., for which the time between the date of signature and the date of the last delivery exceeds one year) the prices were expressed in seven different currencies. In order to calculate an average price, these prices have been converted into European Currency Units (ECU) and US dollars. The average prices were weighted by quantity and converted on the basis of the average annual exchange rate of the different currencies against the ECU and US dollar. Exchange rates as published by European Communities Statistical Office and the International Monetary Fund.

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AUSTRALIA

		Consumer Price Index[1]	Price Index of Materials Used in Manufacturing Industry — All Groups[2]	Award Rates of Pay Indexes Australia - Adult Males In Mining Wage Earners, Weekly Rates[3] (1976=100)
1975	Avg.	57.9	150.4	132.6
1976	Avg.	65.7	168.4	160.9
1977	Avg.	73.8	192.0	179.0
1978	Avg.[4,5]	79.7	198.5	190.0
1979	Avg.	86.9	248.8	127.9
1980	Avg.	95.8	321.8	140.8
1981	Avg.	105.0	355.3	154.1
1982	Avg.[6]	116.7	368.6	174.9
1983	Avg.	128.5	401.6	181.8
FY84	Avg.	133.6	95.3	—
FY85	Avg.	142.6	100.0	—
FY86	Avg.	—	105.0	—
Jan	1986	—	109.5	210.0
Feb	1986	—	108.7	210.0
Mar	1986	150.5	99.4	210.5
Apr	1986	—	94.2	210.5
May	1986	—	93.5	210.5
Jun	1986	153.0	95.6	210.5
Jul	1986	—	97.8R	215.3
Aug	1986	—	98.9R	215.3
Sep	1986	157.0	105.4R	215.3
Oct	1986	—	105.9R	215.4
Nov	1986	—	104.9R	215.6
Dec	1986	161.5	105.2R	215.6
Jan	1987	—	106.2R	215.9R
Feb	1987	—	108.9R	216.5
Mar	1987	164.7	108.4R	221.4R
Apr	1987	—	108.3R	221.1
May	1987	—	108.1R	221.0
June	1987	—	108.1R	221.3
July	1987	—	—	221.5

P = Preliminary R = Revised since last month

[1]Weighted average of six State capital cities (1975 to 1930), and eight capital cities from 1981 (Base: year 1980-81=100.0). Index periods are for normal calandar years; figures shown at tnd of year represent yearly average; figures shown at end of quarter represent quarterly average.

[2]Australian Bureau of Statistics, Canberra: "Price Index of Materials Used in Manufacturing Industry" (Catalogue No. 6411.0). The basis of this index was revised to 1984 = 100. the previous index was 1969 = 100.

[3]Australian Bureau of Statistics, Canberra: "Award Rates of Pay Indexes, Australia" (Catalogue No. 6312.0). Figures for the latest fourteen months shown are subject to revision.

[4]Annual Averages are for financial year ending June 30.

[5]Monthly data for 1970-78 appear on pages 4.7 and 4.8 of Report 138.

[6]Monthly data for 1979-82 appear on page 35 of Report 184.

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GOVERNMENT STATISTICS

CANADA

			Wage-earner Data: Average Hourly Earnings (C$)[2]					
		Industry Products Price Index: All Commodities[1] (1981 = 100)	Uranium Mines (SIC 057)	Metal Mines (SIC 051-059)	Mines, Quarries and Oil Wells[3] (SIC 051-099)	Primary Non-ferrous Metal Industries[4] (SIC 296)	(SIC 298)	Chemicals and Chemical Products[5] (SIC 372-379)
1979	Avg.[6]	217.9	—	9.60	9.66	—	—	7.67
1980	Avg.	247.2	—	10.58	10.80	—	—	8.50
1981	Avg.	288.7	—	12.02	12.23	—	—	9.53
1982	Avg.[7]	288.8	—	13.74	13.92	—	—	10.63
1983	Avg.	298.8	—	—	14.30	—	—	11.17
1984	Avg.	310.9	17.88	—	—	—	—	—
Jan	1985	117.5	18.05	16.13	15.60	12.32	10.80	12.04
Feb	1985	117.7	18.78	16.41	15.68	12.52	11.05	12.06
Mar	1985	118.4	18.24	16.21	15.57	12.44	10.97	12.02
Apr	1985	118.3	18.63	16.44	15.80	12.81	11.23	12.04
May	1985	118.6	19.41	16.51	15.63	12.76	11.25	12.15
Jun	1985	118.6	18.49	16.20	15.49	12.89	11.14	12.14
Jul	1985	118.6	18.14	16.27	15.41	12.96	11.17	12.13
Aug	1985	118.4	17.07	16.03	15.30	12.97	11.31	12.19
Sept	1985	118.6	18.53	16.55	15.72	12.95	11.39	12.26
Oct	1985	119.0	18.74	16.51	15.70	13.14	11.53	12.33
Nov	1985	119.3	19.05	16.66	15.88	12.76	11.32	12.49
Dec	1985	120.0	19.07	16.57	16.01	12.51	11.09	12.59
Jan	1986	121.0	18.15	16.22	15.86	13.11	11.48	12.52
Feb	1986	120.8	19.52	16.57	15.99	13.20	11.59	12.45
Mar	1986	120.1	19.04	16.65	15.93	13.11	11.59	12.54
Apr	1986	119.3	19.38	16.68	15.95	13.07	11.64	12.54
May	1986	118.4	19.54	16.68	15.78	13.16	11.72	12.51
Jun	1986	118.6	19.80	16.63	15.64	13.44	11.86	12.49
Jul	1986	118.8	19.51	16.34	15.48	13.28	11.73	12.52
Aug	1986	119.1	18.39	16.17	15.46	13.31	11.31	12.70
Sep	1986	119.4	19.32	16.62	15.78	13.14	11.45	12.90
Oct	1986	119.9	19.97	16.81	16.11	13.30	11.59	12.94
Nov	1986	119.9	20.11	17.01	16.24	13.42	11.66	12.93
Dec	1986	119.7	19.67	16.79	16.19	13.06	11.57	12.99
Jan	1987	120.0	19.53	16.93	16.01	13.06	12.58	12.89
Feb	1987	119.8	20.33	17.20	16.21	13.01	12.66	13.11
Mar	1986	120.3	20.04	17.14	16.15	13.57	12.58	13.02
Apr	1987	121.1	20.47	17.38	16.26	13.75	11.99	13.27
May	1987	122.0	20.50	17.12	15.96	14.23	11.44	13.19R
June	1987	122.5R	20.23R	16.94R	15.70R	13.65R	12.77R	12.88R
July	1987	123.1	19.87P	16.93P	15.70P	13.71P	12.75P	12.99P

P = Preliminary R = Revised since last month

[1]Statistics Canada, Prices Division, Ottawa: "Industry Price Indexes" (Catalogue 62-011). Indexes for the most recent six months shown are subject to revision. This category was formerly known as "Manufacturing." Index prior to 1985, 1971 = 100.

[2]Statistics Canada, Labour Division, Employment and Payrolls Section, Ottawa: "Employment, Earnings and Hours" (3Reports 175 through 185 list this series title incorrectly as "Metal Mining, Including Milling (SIC 050-099)"Æ Beginning with the March 1983 figure, Wage Earner Data are based on a census of all companies employing 200 or more wage earners, plus a random survey of companies employing fewer than 200 wage earners. Prior to March 1983 only companies employing 200 or more wage earners are included in the Wage Earner Data. Wage Earner Data were further revised in January 1987 and now reflect a slightly different base than previously.

[3]Reports 175 through 185 list this series title incorrectly as "Metal Mining, Including Milling (SIC 050-099)."

[4]Beginning with the April 1983 figure, Primary Metal Industries, non-ferrous is split into SIC 296 and SIC 298.

[5]Chemical and Chemical Products prior to April 1983 was SIC 370-379. The new series is from a new survey which includes all companies and is based on a 1970 classification. The old survey only included companies of 20 employees or more.

[6]Monthly ISPI data for 1977 and 1978 appear on page 4.10 of Report 138, and monthly wage-earner data for 1973-78 appear on page 4.11 of Report 138.

[7]Monthly data for 1979-1982 appear on page 37 of Report 184. On that page, the wage earner index entitled "Metal Mining, Including Milling (SIC 050-099)" should read "Total Mining (SIC 051-099)".

REPUBLIC OF SOUTH AFRICA

		Average Declared Working Costs per Metric Ton of Gold Ore Milled (Rand)[1]	Tonnage-Weighted Index of Average Working Costs per Metric Ton of Gold Ore Milled (March 1982 = 100)[2]	Consumer Price Index[3] (1980 = 100)[4]	Producer Price Index All Groups[5] (1980 = 100)	Total Employment in Mining and Quarrying (Code 35)[6]	Total Salaries and Wages in Mining and Quarrying (1,000 Rand) (Code 40)[6]
1975	Avg.	16.71	—	157.2	100.0	639,473	1,003,617
1976	Avg.	19.30	—	174.7	115.1	671,240	1,212,983
1977	Avg.	23.87	—	194.4	130.0	712,006	1,420,670
1978	Avg.[7]	27.14	—	137.2	142.7	664,571	1,537,169
1979	Avg.	30.18	—	155.3	164.5	692,209	1,830,632
1980	Avg.[8]	35.53	—	176.7	192.1	714,379	2,279,615
1981	Avg.	41.89	—	206.5	218.3	728,506	2,820,505
1982	Avg.[9]	47.25	104.2	233.5	248.7	707,552	3,246,071
1983	Avg.	51.88	115.0	262.2	274.8	696,579	3,644,772
1984	Avg.	58.95	130.3	292.8	297.9	712,080	4,196,764
1985	Avg.	68.76	151.68	192.6	181.2	726,804	396,956
Jan	1986	—	—	213.8	203.6	744,070	449,513
Feb	1986	—	—	215.8	206.9	754,458	438,562
Mar	1986	75.76	167.8	218.3	206.9	759,897	445,387
Apr	1986	—	—	222.2	208.9	756,388	437,563
May	1986	—	—	222.6	212.5	754,788	425,544
Jun	1986	77.65	172.0	224.4	213.3	756,637	462,365
Jul	1986	—	—	228.8	216.3	756,140	516,832
Aug	1986	—	—	232.2	220.3	760,929	502,968
Sep	1986	81.94	181.8	236.7	221.9	765,772	511,363
Oct	1986	—	—	239.3	226.8	763,953	512,897
Nov	1986	—	—	242.4	230.2	761,325	531,509
Dec	1986	85.38	189.9	244.9	232.1	752,264	536,970
Jan	1987	—	—	248.3	233.9	740,031	532,577
Feb	1987	—	—	251.0	237.0	757,872	598,986
Mar	1987	88.17	197.1	255.0	239.6	762,697	536,006
Apr	1987	—	—	258.2	242.5	761,850R	533,487R
May	1987	—	—	261.2	243.6	759,421	530,981
Jun	1987	90.74	203.5	263.1	244.9	759,433	573,546
July	1987	—	—	266.2	246.8	—	—
Aug	1987	—	—	270.0	—	—	—

P = Preliminary R = Revised since last month

[1]Chamber of Mines of South Africa, Johannesburg: "Analysis of Working Results," published quarterly.

[2]Page 16 of Report 178 contains description and calculation of index, and page 24 of Report 178 lists figures for 1982.

[3]Republic of South Africa Department of Statistics, Pretoria: "Government Gazette: Consumer Price Index for Urban Areas."

[4]The basis for calculation prior to January 1985, 1975 = 100. For annual averages prior to 1978, April 1970 = 100.

[5]Previously known as the Wholesale Price Index, now the Producer Price Index. The computation remains the same. The basis for calculation prior to January 1985, 1975 = 100.

[6]Bulletin of Statistics, Department of Statistics, Pretoria.

[7]Historical data for the Average Declared Working Costs and Consumer Price Index 1970-1979 appear on page 4.9 of Report 140.

[8]Monthly data for Codes 35 and 40, 1977-1980, appear on page 28 of Report 157

[9]Monthly data for 1979-82 appear on page 39 of Report 184.

NUEXCO

GOVERNMENT STATISTICS

UNITED STATES

		Producer Price Index[1]		Consumer Price	GNP Implicit Price	Gross Average Hourly Earnings of Production or Non-supervisory Workers (US$)[5]			
		Industrial Commodities (1967 = 100)	All Commodities (1967 = 100)	Index[2] (1967 = 100)	Deflator[3,4] (1982 = 100)	Metal Mining (SIC 10)	Primary Non-ferrous Metals (SIC 333)	Chemicals and Allied Products (SIC 28)	Electric and Electronic Equipment (SIC 36)
1980	Avg.[6]	274.8	268.8	246.8	85.7	10.26	10.63	8.30	6.94
1981	Avg.	304.1	293.4	272.4	94.0	11.55	11.98	9.12	7.62
1982	Avg.[7]	312.3	299.3	289.1	100.0	12.31	12.93	9.96	8.21
1983	Avg.	315.7	303.1	298.4	103.9	12.58	13.43	10.59	8.65
1984	Avg.	322.6	310.3	311.1	107.7	13.05	13.43	11.08	9.04
1985	Avg.	323.8	308.7	322.2	111.2	13.38	13.74	11.56	9.46
1986	Avg.	312.2	299.8	328.4	114.1	13.20	13.49	11.98	9.65
Jan	1986	323.8	308.9	328.4	—	13.41	13.68	11.87	9.58
Feb	1986	318.9	304.4	327.5	—	13.46	13.80	11.83	9.57
Mar	1986	314.0	300.3	326.0	112.9	13.41	13.91	11.80	9.60
Apr	1986	311.6	298.2	325.3	—	13.47	13.89	11.84	9.60
May	1986	311.6	299.2	326.3	—	13.40	13.79	11.90	9.63
Jun	1986	311.8	299.0	327.9	113.7	13.50	13.50	11.95	9.59
Jul	1986	308.5	297.4	328.0	—	13.33	13.30	12.05	9.67
Aug	1986	307.9	297.2	328.6	—	12.96	13.13		9.64
Sep	1986	308.7	297.5	330.2	114.7	13.04	13.28	12.03	9.70
Oct	1986	309.6	298.4	330.5	—	12.85	13.16	12.08	9.67
Nov	1986	309.8	298.7	330.8	—	12.75	13.14	12.17	9.73
Dec	1986	309.8	298.1	331.1	114.9	12.70	13.03	12.20	9.82
Jan	1987	313.5	300.9	333.1	—	12.94	12.98	12.18	9.84
Feb	1987	314.9	302.2	334.4	—	12.99	12.83	12.21	9.84
Mar	1987	315.7	302.7	335.9	116.1	13.04	12.79	12.24	9.84
Apr	1987	317.3R	305.0R	337.7	—	13.16	12.90	12.30	9.82
May	1987	318.6	307.3	338.7	—	12.97	12.92	12.31	9.83
Jun	1987	320.2	308.5	340.1	117.2	13.05R	12.93	12.27	9.84
Jul	1987	322.6	310.2	340.8	—	13.07P	13.04P	12.36R	9.89R
Aug	1987	323.8	310.5	342.7	—	—	—	12.35P	9.89P

P = Preliminary R = Revised since last month

[1]US Bureau of Labor Statistics, Washington, D.C.: "Producer Prices and Price Indexes," (formerly "Wholesale Prices and Price Indexes"). Producer Price Indexes are revised four months after they are first released to reflect the availability of late reports and corrections by respondents.

[2]US Bureau of Labor Statistics, Washington, D.C.: Consumer Price Index for All Urban Consumers, US City Average, All Items.

[3]US Department of Commerce, Washington, D.C.: Bureau of Economic Analysis, National Income and Wealth Division: "Survey of Current Business." The GNP Implicit Price Deflator is published quarterly, and seasonally adjusted.

[4]The basis for calculation of this index was revised to 1982 = 100. 1984 and 1985 figures have been adjusted to that basis. The basis for calculation prior to 1984, 1972 = 100.

[5]US Bureau of Labor Statistics, Washington, D.C.: "Employment and Earnings." All data based on 1972 revision of SIC Manual. Data for 1970-1976 are adjusted to the March 1977 benchmark. Data for 1977-1978 are adjusted to the March 1979 benchmark. Data for January 1979 and beyond are adjusted to the March 1980 benchmark.

[6]Monthly data 1970-1978 for Producer Price Index-Industrial Commodities, Consumer Price Index, and Employment and Earnings SIC codes 10, 333, and 28 and quarterly data for GNP Implicit Price Deflator appear on pages 4.6-4.8 of Report 139. Monthly data 1977-1978 for Employment and Earnings SIC Codes 10, 333, and 28 appear on page 33 of Report 147. Monthly data 1970-1978 for Employment and Earnings SIC Code 36 appear on page 23 of Report 154. Monthly Data 1977-1980 for Producer Price Index-All Commodities, appear on page 21 of Nuexco Report 158.

[7]Monthly data 1979-1982 for all listed indices appear on page 41 of Report 184.

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